EVALUATION OF A PLAY ENVIRONMENT FOR BLIND CHILDREN.

By

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EVALUATION OF A PLAY ENVIRONMENT FOR BLIND CHILDREN

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B.S., California State Polytechnic University, Pomona, 1970

THESIS

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the requirements for the degree of

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in

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at

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Chapter I

THE PROBLEM

INTRODUCTION

According to Clarke (20), there are six basic criteria that should be considered in selecting a problem for a research study. The writer of this thesis would like to explain, in his opinion, how this study met these six criteria.

I. Is the problem of interest to you?

The problem had a very definite interest to the writer. To a large extent it represented the primary reason why this writer, as a professional landscape architect, had chosen to major in recreation administration as a graduate student. The types of environments that are required by people in satisfying their recreation needs present the designer with some of his finest challenges in providing for human needs.

II. Is it possible to obtain data appropriate to the solution of the problem?

In the opinion of this writer it was possible and very desirable to obtain the appropriate data. However, because of the limited number of qualified people that made up the select sample to be surveyed, it was necessary for the writer to do a considerable amount of traveling to reach all of the interviewees involved at their convenience.

III. Are techniques available for the solution of the problem?

Basic techniques were available to solve the problem. However, as the major tool for gathering the data was the presentation of a new and different type of play environment for evaluation, it was necessary for the writer to create this data-gathering tool as part of the study.

IV. Is the research feasible as to time and cost?

In the opinion of this writer the research was feasible in regard to both time and cost. The writer accepted the responsibility to expend whatever amount of time and money were required to conduct the study properly.

V. Do you have adequate training and experience to perform the study?

As a professional landscape architect the writer believes he was fully qualified both in training and experience to perform this particular design-oriented study. In addition, the writer had recently completed the graduate course in research methods that had provided the basic research knowledge required to successfully conduct the study.

VI. Will the problem make a significant contribution?

In the opinion of this writer the problem will definitely make a significant contribution, whether the hypothesis was supported or rejected. Not only will it contribute important new knowledge in respect to the play needs of blind children, but it will also represent a valid, interdisciplinary research effort merging the fields of recreation and landscape architecture in a common effort.

STATEMENT OF THE PROBLEM

This study had as its purpose an evaluation of a play environment for blind children using the philosophical method of research, in which the judgements of qualified people were used for the purpose of gathering data.

Sub-problems

In order to accomplish this purpose, it was first necessary to make a thorough survey of the existing literature that was pertinent to the study. To provide the qualified people with clear-cut elements to evaluate, a play environment was designed that was specifically planned to encourage the blind child to learn to participate in play. The points evaluated were how successful the various design elements in this play environment were in helping the blind child to use his remaining senses to learn to participate in play.

A questionnaire was constructed and pretested for use with the presentation of the play environment when it was shown to the qualified people. This questionnaire was designed to gather specific and unbiased evaluations from the qualified interviewees as to the success or failure of the various design elements involved in the play environment to help the blind child to develop through his play activity a greater degree of mobility and orientation capability.

A list of qualified people with experience in training and education of blind children was developed from those available in the surrounding geographical area. A schedule of interviews was established at which each of the qualified interviewees was asked

to observe the presentation of the play environment and to make his evaluation of it by filling out the prepared questionnaire.

Assumptions

For the purpose of this study, the following assumptions were made: (1) valid data could be obtained by using this philosophical research method in evaluating the effectiveness of the play environment involved in this study; (2) there were enough qualified interviewees available in the surrounding geographical area to perform the study; (3) these people who had actually worked in training and educating blind children were qualified to make an evaluation of the effectiveness of the design elements involved in the proposed play environment.

Need for the Study

A survey of the existing literature in the area of the play needs of blind children gave ample evidence of a need for new research and knowledge. This survey showed that new and better ways need to be found to help the blind child to develop the motivation, skill, and confidence that will encourage him to participate in and benefit from the play activity that all children need to develop strong bodies and alert minds.

Definitions of Terms

In reference to this study, the following definitions were made.

Play environment referred to the specific play environment for blind children that was planned and designed for evaluation in this study.

Blind children were defined as those children of ages from six to twelve years whose visual acuity was not greater than 20/200 even when corrected with glasses. They were further defined as children who were free of all other disabilities except for their blindness.

Qualified people were defined as those specific interviewees selected for this study who had the type of experience and training in working with blind children that qualified them to make an evaluation of the effectiveness of the design elements in this play environment to help the blind child develop a greater degree of mobility and orientation skill.

Clear-cut elements for evaluation were defined as those design elements included in the play environment for blind children that were specifically planned to help the blind child use his remaining senses to learn to participate in play.

Mobility was defined simply as the ability to safely and effectively move from one position in the environment to another.

Orientation was defined as the process of using all of the remaining senses to effectively relate to significant elements in the surrounding environment. This relationship included both the ability to locate position and direction, and the ability to utilize available tools and materials.

Delimitations

Although the data obtained in this evaluation may have broader applications to play environments for children with other types of disabilities, this study was specifically delimited to the application

of data in reference to blind children as previously defined. The study was further delimited to the time (spring, 1973) and to the place (the geographical area extending from Sacramento to the San Francisco and Oakland bay area in California).

Hypothesis

The hypothesis tested was that a majority of a sample of people qualified in training and educating blind children would agree that the play environment designed for this study would be rated at least effective on the rating scale in helping blind children to develop through their play activity a greater degree of mobility and orientation capability.

Limitations

The following limitations beyond the control of the writer may have affected this study: (1) the limited number of qualified people in the defined geographical area who were available for interview; (2) the limited amount of existing literature and research in this specific area that was available for survey; (3) the possibility of misinterpretation of the questionnaire items.

Chapter II

REVIEW OF RELATED LITERATURE

Much has been written concerning the various needs and problems of blind children, but only a small amount of actual research has been done in the specific area of their play needs. In the past there has been good reasons for this lack of study, because many parents of blind children and their teachers believed that the blind child was not capable of participating in any type of normal play. Many believed that not only was normal play too dangerous an activity for the blind child to attempt, but in addition his almost certain failure to succeed in his attempts would only emphasize the hopelessness of his handicap. Zahl quoted Helen Keller who said, "Not blindness but the attitude of the seeing to the blind is the hardest burden to bear." (45:57) In the past this same attitude has been the major limiting factor that has prevented blind children from participating in and benefiting from the kinds of play activities that all children need to develop strong bodies and alert minds.

More recently writers like Buell (13, 14, 15, 52, 53), Lowenfeld (34, 64), and Norris (38, 68) have attempted to point out the very real need of blind children to participate in as many of the types of activities that all children indulge in as it is possible for them to do so. Norris expressed the opinion that:

> Unnecessary limitations are too often placed upon the blind child because of unrealistically low expectations for

> his development. Preoccupation with his physical handicap frequently obscures the child's signs of readiness to take on new experiences. While recognizing the dangers of expecting too much, it has been the staff's experience that the dangers of expecting too little are even more serious. (38:75)

According to Spencer (42), a blind child needs to be given every possible opportunity to express himself freely in all types of activities, so that as he grows he will begin to learn his true capabilities and limitations. Perhaps this is nowhere more important than in his play activity.

With this increasing awareness of the need for the blind child to expand his capabilities by greater participation in all types of activities including play, there has been an increase in the number of research studies that have investigated possible relationships that may exist between the participation, the type of activity, and the benefit derived. This chapter will review some of these more important studies as they relate to the play needs of blind children.

ORGANIZATION OF THE CHAPTER

Although research relating specifically to the play needs of blind children has been limited, related studies in such areas as the development of motor skills and spatial concepts in blind children, and the effect of these skills on their successful integration into a sighted society have many applications. With this in mind, the related literature reviewed was organized under the following categories:

I. Play and its Implications for the Blind Child.

II. Developing the Blind Child's Ability to use Sensory Cues to Improve his effective Mobility and Orientation.

III. Use of the Embossed, Tactile Map by the Blind.

IV. The Importance of Self-image to the Blind Child.

V. The Relationship between effective Orientation and Mobility, and successful Integration.

PLAY AND ITS IMPLICATIONS FOR THE BLIND CHILD

In one of the very few existing writings dealing specifically with play and its relationship to development in blind children, Tait (73) reported that play is the major single means of self-expression within the child's control and thus it is an important outlet for a healthy, emotional growth and development. Play offers the child an opportunity to work off his accumulated feelings of tension, frustration, insecurity, aggression, fear, and confusion. These aspects of play are perhaps even more important to the blind child than to the sighted child because, according to Lowenfeld (34), the physical disability of blindness itself is very likely to produce greater feelings of tension, frustration, insecurity, aggression, fear, and confusion. Thus, the blind child has even a greater need for the ability to participate in play as an outlet to help work out his problems.

Unfortunately, very few blind children seem to have the skill and confidence required to take advantage of this opportunity to use play as an outlet for pent-up feelings. Burlingham (16) wrote that, according to her observations in working with blind

children, there is a distinct lacking of free, aggressive expression in their play. Instead, they seem to have a distorted fear of hurting themselves or someone else, and in addition they are hesitant to show any signs of aggression directed toward a sighted peer because of the great dependence they feel toward the sighted.

No doubt much of this lack of aggression could be traced to the overprotective influence of the parents, but the fact remains that blind children as a group desperately need a suitable way in which to work off their emotional tensions, and according to many writers in the field they have not yet found it. The ability to freely and naturally participate in play could be one of the most important attributes they could acquire.

Buell (13) wrote that physical fitness is another very important by-product of healthy, vigorous play. In another source he indicated that it may be more so for the blind child than for the sighted.

> Physical fitness is important for all of us, but particularly for blind individuals. Superior stamina is required by visually handicapped persons in carrying on day-to-day activities and functioning in social situations, where they are usually under abnormal pressures. A blind person must expend much more energy to reach the same rung of success as an individual who has normal vision. (14:4)

As is the case in most developmental processes, the early childhood years are critical. The sighted child will naturally be very active, and, unless the young blind child is allowed and encouraged to participate freely in play, it is very likely that his normal physical development will be retarded. This may result in low vitality and inferior physical stamina that could plague

him for the remainder of his life.

Buell (14) further implied that another important aspect of play is its value in developing a greater degree of independent mobility in the blind child. It seems obvious that to play actively and effectively the child must also learn to move about effectively and safely.

Fraleigh (77), in a study investigating the influence of play on social adjustment in children, pointed out another important implication. This study concluded that there tends to be a strong correlation between skillful participation in play and successful social adjustment. Also, among groups of children there tends to be an important prestige factor associated with skillful participation in play. Finally, largely because of these two factors mentioned above, success in play had a tremendous influence upon the child's evaluation of himself and of other children.

Smith (80), in an experimental study that investigated the play activities of blind children, concluded that if properly motivated the blind child can and will learn to participate in the same types of play activities as the sighted child. Also, there were strong indications that retarded physical development in some blind children who participated in the study could be improved over a period of time. These conclusions suggested that additional work should be done to develop new and better ways to motivate blind children to learn to participate in play.

Lairy (63) pointed out still another important consideration of play and its relationship to the blind child. Within the

legal definition of blindness there is a considerable range of residual sight, and the more recent work with blind children tends to promote and encourage the maximum use of this available vision. In many instances the degree of effective mobility and orientation is greatly improved with this increased use of remaining vision. Lairy reported that for the sighted child vision undeniably stimulates early motor activities of which play is one of the most important. For the blind child with some degree of remaining vision, it has also been established that increased motor activities like play have a significant effect on stimulating and developing the use of this remaining vision. In many instances, it has been shown that the individual motivation of the blind child to learn to use remaining vision is a more important factor than the actual amount of vision present.

Oliver (69) wrote that effective participation in play can be one of the important ways in which the blind child can avoid or improve the posture problems that very often afflict him.

> Posture tends to be less good in blind children than in sighted children for three major reasons: (1) They do not possess the good musculature upon which the maintenance of good posture is to a large extent dependent; (2) They tend to adopt a faulty carriage in moving about because of their inability to see. Many adopt a forward position of the body with the hands and arms outstretched to avoid hurt from obstacles; others tend to sway backward in an attempt to shield their heads from obstacles; (3) They are never able to imitate good posture because they cannot see it in others. (69:38)

Oliver stated that blind children need play not just for fun, but also for developing the physical strength and endurance required to attain good posture. The blind child needs the opportunities provided by play to explore the capabilities of his body.

As a means of using play activity to improve body strength and posture, Oliver recommended:

> Blind children should be encouraged to move in all directions. Up and down movements are popular because they are safe; forward, sideways, and backward movements must also be encouraged. These children need opportunities to let themselves go flat-out; this is a self-testing activity that sighted children perform as they develop physically. The blind need an area surrounded by a border of a different material to indicate when the safe area has been crossed. (69:39)

Lowenfeld (34) suggested that blind children must be given the freedom to acquire a wide variety of different types of experiences in order to obtain a knowledge of objects, places, and situations. Play is one of the most basic means through which these different types of experiences are encountered. Further, it would seem that those who wish to be really useful to the blind must understand that to live is not only to see, but also to hear, to feel with the fingers as well as with the emotions, to sense, shape, manipulate, converse, think, walk, smell, and taste. These are also the means by which the blind child must learn to participate in play, and he needs all of the experiences that can provide him with opportunities to use these remaining senses to play effectively.

Resnick (70) stated that in many ways recreation and play provided the ideal environment in which blind children can be motivated and encouraged in at least the beginnings of independent mobility. However, the reverse can also occur in that the impact of repeated failure after failure in play can cultivate for the blind child a sense of worthlessness and hopeless dependence. Play, particularly for the blind, should be success oriented and confidence-

building. It must provide a continuous series of challenging and interesting experiences that allow the blind child to successfully interact with his unseen environment.

Dattner (25), an architect who has spent a considerable amount of time investigating the play needs of handicapped children, reported that their play follows the same patterns as those of normal children; it serves the same function of expanding their experience and understanding of the world, and it provides them with the same potential for enjoyment and expression. In reference to physically handicapped children Dattner wrote:

> Children with special problems need specially designed playgrounds, but—it cannot be repeated too often—their essential requirements are the same as those of normal children. The environment in which they play must respond to that part of them which is healthy and capable, with help, of growth and development.
>
> . . . .
>
> The three goals of physical rehabilitation are to arrest the deterioration of existing abilities; to strengthen skills that are imperfectly developed but capable of further growth; and to provide alternate, compensatory skills to replace those that are lacking or irreparably damaged. (25:109, 110)

Dattner suggested that the task of the designer in providing for the needs of physically handicapped children including the blind is to provide them with more ways to do what all human beings must do to preserve their humanity, to experience life to the fullest degree possible. To accomplish this task, the designer will need the expert counsel of those who know best what the problems and remedies of the young blind are, such people as doctors, nurses, therapists of all kinds, and others who train and educate the blind.

Hunt (30) reported that another important relationship that must be considered in any review of the play needs of blind children

is the size and shape of the physical space in which the play activities occur. To a large extent, before the blind child can effectively move about in play, he must first carefully orient to and memorize the physical space involved. The designer of this physical play space can provide the blind child with a wide range of valuable sensory cues to assist him in more effectively performing this orientation and memorization. Such nonvisual sensory cues are of critical importance to the blind child for they provide him with some of the very few means he has of perceiving space.

Moor (66) examined a final implication of play with regard to its effects on intelligence and mental development. For many years in the past blindness in a child was considered to be invariably accompanied by mental deficiency or with at least some degree of mental incapacity. Today, this approach is being challenged and many experts in the field now believe that such mental incapacity need not occur. One of the best possible assurances that it will not occur is to provide the young blind with a wide variety of challenging learning experiences to help compensate for the lack of visual stimulation. Experiments have indicated that the I.Q. of blind children can be increased by as much as twenty points by merely transferring them from an understimulated environment to one in which they are provided with challenging opportunities to use their remaining senses to learn. Experiments strongly suggest that for the blind child play is one of the most valuable learning experiences he performs, and his play environment could well be one of the most valuable environments in which to provide him with some of this wide

range of challenging learning opportunities.

DEVELOPING THE BLIND CHILD'S ABILITY TO USE SENSORY CUES TO IMPROVE HIS EFFECTIVE MOBILITY AND ORIENTATION

According to Bernardo (50), eighty-seven percent of the sensory information the sighted person receives from his environment comes to him through his eyes. This means that the blind person to a very large extent will be deprived of this tremendous source of information. If he is to compensate for this disadvantage to the maximum possible extent the blind person must develop the ability and skill to use all of his remaining senses to utilize those sensory cues available to him in his environment.

Lowenfeld wrote:

> The blind person must make use of all of his senses in finding his way. His hearing is constantly active in observing all kinds of sounds, including echoes; he interprets odors which may come to him from many sources; he notices changes in air currents and temperatures; his feet feel the nature of the ground, whether it leads up or down, whether it is soft, graveled, paved, wooden, carpeted, etc.; he observes distances in terms of time, through movement and through sound. Any clue that he can obtain is interpreted for the purpose of safe locomotion and inseparably also for that of orientation. (34:177)

Lowenfeld also reported that while the sighted child can explore his environment visually long before he is able to walk, the blind child must get in touch with things in order to observe them; he must be able to move about before he can really begin to explore. This capacity to move about consists of two components. One is mental orientation and the other is physical locomotion. Both are essential for mobility.

Cratty (23), in a study that investigated the perceptual abilities of blind subjects learning nonvisual locomotion, found that ninety-two percent of the subjects tested tended to veer to the right or left from a straight line of travel. However, with practice that involved the use of sensory cues to help them correct this veering tendency, a significant increase in skill in maintaining a straight line of travel was developed. Many believe that this veering tendency and its correction is one of the most important mobility problems of the blind.

Another important finding of this study that has important implications in developing the ability to use sensory cues was that most of the blind subjects tested demonstrated the ability to detect in their locomotion a minimum slope in a ground surface of approximately two degrees. Such information as this has valuable applications in the use of change in slope as a sensory cue to improve mobility.

Cratty further reported that the blind subjects in this study were able to detect a curvature in a curb up to five feet in radius as a guide to locomotion. Most subjects were not able to detect a curvature with a radius larger than five feet. Such information is of great importance in designing sensory cues to aid the blind in improving their effective mobility.

Sound as a sensory cue provided another important guide to these blind participants in developing mobility and orientation. The ability to follow a straight line of travel using a local or adjacent sound source as a guide provided a valuable and effective

external stimulus. There are strong indications that the blind child should begin to learn the use of such sensory cues as these as early in life as possible to provide him with the mobility skill that will allow him to begin to explore his environment. Cratty wrote:

> . . . when attempting to teach a blind client a new environment, first draw a map of the area outlining in detail the gradients of the area, the relatively consistent noise characteristics of the environment, and the horizontal curvature of pathways which this client can be expected to perceive. With such a map the trainer is making effective use of all of the sources of input available . . . . (23:87)

Cratty (22), in another writing of major significance, stated that it is unrealistic to expect a blind child to begin to learn and understand the complex organization of the spaces that surround him without a thorough and systematic effort made to make him aware of the dimensions of himself and of his world. Helping him develop the skill to use all of his remaining senses to interpret sensory cues is one major way to help the blind child to develop such an awareness.

According to Cratty and others, one of the most important sensory potentials of the blind is the obstacle sense. This is the ability of the blind to detect and react to subtle sound echoes emanating from the surfaces of various obstacles within close proximity. It is a phenomenon similar to the observed ability of such other mammals as bats and dolphins to use high-frequency echoes to guide their movements. Cratty stated that such an obstacle sense can be developed and trained in most blind persons and he recommended that the young blind child be given the earliest

possible opportunity to begin to learn it.

> The ability of some blind children and adults to detect obstacles has been found to be remarkable. In one investigation, a totally blind child of fourteen years (whose eyes had been removed due to cancer) was found able to avoid plywood obstacles placed at random along an alley while travelling at increasing speeds on his bicycle. (22:175)

In the same writing, Cratty pointed out another important sensory cue that is available to assist the blind child in improving his orientation and mobility. This is the ability to detect either obstacles or openings that might lie in a position between the blind child and an adjacent sound source. It has such real life applications as developing the ability to detect the presence of trees, poles, or possibly a mailbox that might lie between the blind traveler and an adjacent traffic way as the blind person moves along a sidewalk. The object is detected and located by the sound shadow it creates in blocking off the noise from the trafficway. By means of the same type of auditory sensory cue, the blind child can also locate the openings or entries in walls or buildings as the sound source is received through them. Again, Cratty recommended that the blind child be given opportunities to begin to learn these basic sensory skills as early in life as possible to encourage his independent mobility.

In another source Cratty (54) suggested, in reference to programs of learning for blind children, that early, thorough, and systematic tactile training using all types of sensory cues be accomplished. Such a program of learning mobility and orientation skills should start as soon as the child begins to walk.

Lord (32) indicated that the blind have no special compensating skill in using sensory cues to help them move about. Any ability that they are to acquire in using such nonvisual cues to improve the effectiveness of their mobility and orientation must be learned by instruction, concentration, and practice. Lord reported that there are at least five major categories into which sensory cues can be grouped:

I. Auditory cues involve the four components of loudness, pitch, quality, and frequency. The need for a blind person to learn to use the auditory cues that surround him in his unseen environment is of critical importance in his safe mobility and orientation.

II. Tactual cues are also crucially important in helping the blind gain a reality orientation to their environment. The ability to observe by means of touch and manipulation develops with experience. Tactual space perception of the blind differs from visual perception in that touch requires direct contact. Thus, the blind child can only readily observe those things that are made accessible to him.

III. Kinesthetic cues refer to those sensory cues related to muscular memory. Some examples would be the degree of muscular exertion and fatigue involved in climbing a given number of stairs, or the length and speed of pace required to cover a certain distance traveled in a given length of time. Although very few research studies have been made involving kinesthetic cues in the blind, there is good indication that this is another valuable

sensory cue that the blind can learn to use to improve mobility.

IV. Visual cues involve the use of any remaining vision that may be present. As stated previously, there is a wide range of degree of sight within the legal definition of blindness, and it is imperative that the blind learn to utilize this residual vision to the maximum possible extent in improving orientation and mobility.

V. Other sensory cues are those of taste, smell, and air current detection. The latter has proven to be another effective means for the blind to interpret information from their surrounding environment that can increase their mobility independence.

Although these five major categories of sensory cues do exist, it is important to note that in any given real life situation the blind child will not react with any one sense but with his total sensory equipment. As each day passes, the blind child can gradually improve his competency to live effectively primarily by learning to use all of the sensory input he can detect from his environment. By developing the skill to interpret a wide range of sensory cues, he learns new concepts that are essential to an accurate understanding of his world; he learns strategies for exploring and gaining new information; he learns skills that help him to become more self-reliant and effective in living an independent life.

Lord (32) listed the following mobility and orientation skills that the blind child can acquire through his ability to detect and use the wide variety of sensory cues that are available to him in his surroundings: the abilities to follow a straight line of travel, to differentiate right from left, to establish and

follow a given compass direction, to locate and orient to a local landmark (by sound, touch, smell, or use of residual vision), to detect a change of slope or texture through the soles of his shoes on the ground surface, to perform an effective search pattern to establish position or direction, to determine the length of distance travelled, to determine size and relative scale of significant objects in the environment, to detect and follow the presence of a cast shadow by change in temperature, to learn and follow the correct pattern of streets and sidewalks in the surrounding neighborhood, to learn and memorize a given route or environment, to locate doors and entries by change in sound or wind currents, and the ability to maneuver around obstacles and barriers by developing an obstacle sense.

Lord (33), in another study involving nearly two hundred young blind children as subjects, reported that active research should be undertaken in the study of the formation of concepts in relationship to a blind child's understanding of space and environmental control through his detection and use of sensory cues.

> Their environment must be made meaningful to blind children at as early an age as possible since attitudes toward travel are doubtlessly established during these formative years. (33:45)

Anderson (7), in a study that investigated the precane mobility and orientation of the blind, stated that the young blind child should be taught to detect and use sensory cues in his environment to find answers to such basic questions as: What is a city block? What is its size and shape? How many turns

are made in walking around a block and what are the angles of the turns? What is an intersection and what is a driveway? Anderson's study suggested that mobility and orientation skills are the most important skills that can be developed in the blind. It further indicated that early training in such skills is essential to the ultimate achievement and development of the blind child. Early training in precane skills, which stress the development of the remaining senses in interpreting sensory cues, need to be as systematically taught as any other subject matter.

Gobetz (26) examined mobility training of blind children in an integrated school situation and observed that the majority of these children had insufficient experience or instruction in even the basic body skills of standing, walking, and stopping. Such basic skills as these are essential prerequisites for learning effective mobility. Because of certain fear factors (fear of stepping-off of something, fear of running into something, etc.), the blind child may assume a complete dependence on the sighted and refuse to make any effort in independent mobility. Such a child must be taught at the earliest possible age that the degree to which he will be able to successfully participate in life will be directly related to his ability to function independently.

Gobetz, in pointing out the importance of the use of available sensory cues in a street and sidewalk situation, wrote in reference to the blind traveler:

> He should be able to use traffic sounds, grass edges, sewer openings, the slope or berm of a paved street and parked cars as clues and should be able to straighten himself out.

> . . . .
>
> His best clue to cross at a four-way stop or at a street with lights is to begin when the car on the side street nearest him, either to his right or left, starts out from the corner.
>
> . . . .
>
> To travel competently and safely, a trainee must be able to retain and use verbal instructions and directions. He must develop landmarks and sound cues in his surrounding environment and on routes used often in order to remain well oriented.
>
> . . . .
>
> In order to travel safely and remain well oriented, a blind person must be able to visualize or understand the relationship of parallel or intersecting streets, city blocks, main arteries of travel and the direction of the same. (26:32, 33)

He added, in reference to one particular blind boy and his success in learning to utilize sensory input from his environment:

> In the whole area of conceptualization, Fred is excellent. In the case of the pop machine, he automatically determined its height by computing the difference between how tall he was and the remaining portion of the pop machine projecting above his head.
>
> . . . .
>
> The worker asked Fred to model in clay a scale of the neighborhood in which he lives. This was done with a good deal of interest and Fred spent the better part of an hour explaining all the things that were in his neighborhood and how he traveled around it on his own.
>
> . . . .
>
> He was quick to identify sounds—whistling teakettle, air conditioner, refrigerator, etc. He was infallible in identifying underfoot textures such as carpeting, wood floors, tile floors. (26:85, 86)

In reference to the use of his sensory equipment in helping the blind child to obtain a more concrete understanding of the significant tools, materials, and objects in the world that surrounds him, Lowenfeld (34) wrote that, although hearing is one of the most important sensory receptors that the blind have to depend on, it is only through their sense of touch that they can begin to obtain a concrete understanding of the actual size, shape, texture,

and weight of specific objects. Because of this, the young blind child must be given every opportunity to explore and understand through his fingers a wide variety of different types of activities and experiences if he is to develop coherent ideas and concepts. Lowenfeld stated that unless this is done, there is a very real probability that the young, developing, blind child will compile a large amount of auditory word data that he only superficially understands. His use and understanding of tactile sensory cues will be the major tool the blind child must use to develop this concrete comprehension of the size, shape, texture, and weight of specific tools and materials. The use of models of those objects that are too large to be explored in their actual size has proven to be especially beneficial in helping the blind to develop this more concrete understanding and orientation of objects in their environment.

Freund (56), curator of the Touch and Learn Museum at the Overbrook School for the Blind in Philadelphia, provided one means through which the blind are given the opportunity to explore and understand through tactile manipulation many of the objects that they hear and read about but will never be able to see. This museum contains a wide variety of models of many different types and species of animal life. It has a special section containing models of different kinds of ships, airplanes, and automobiles; all of these are available to the blind person to feel, manipulate, and understand. The museum contains a wide assortment of objects made from different materials such as felt, cork, asbestos, wool, steel,

aluminum, brick, plastic, iron, fiber, etc. There are cutaway models of engines and transmissions and even the human body. There are models of igloos, log cabins, cathedrals, a spinning wheel, and even a garbage disposal unit for a kitchen sink. Two more recent additions are models of a Greek amphitheatre and a model of a volcano in the process of erupting with a cutaway section to show, by touch, how the various strata are distributed and how the magma is emitted through the vent. For the blind child with no significant remaining vision, this museum provides the opportunity to obtain a more concrete understanding of a word like cathedral that otherwise would have only a limited meaning to him. In regard to his overall orientation, this type of tactual exploration adds significant new understanding of the objects in the surrounding environment.

Angus (46), in answering the question "Why should a blind child be taught independent travel?", stated that although it is true that a blind person must rely on the sighted for some things, such as travel in an automobile or selection of proper color combinations, it is also true that the self-concept and sense of personal worth of the blind are tied to their own individual accomplishments. It is the opinion of many in the field that limitations or restrictions on the development of independence in a blind child will tend to correspondently limit and restrict his happiness and participation in life. The effective use by the blind of all available sensory cues in their environment is their key to independence in mobility and orientation.

USE OF THE EMBOSSED, TACTILE MAP BY THE BLIND

A comparatively recent innovation to help the blind to develop a greater understanding of and orientation to their unseen surroundings is the embossed, tactile map. One of the primary purposes of such a map is to provide the blind with a means of exploring and understanding those larger spatial organizations that lie outside the limits of their fingertips. Such spatial organizations are the system of streets and sidewalks that make up a given neighborhood, the manner in which the neighborhood fits into the overall layout of the town or city, and how that particular city fits into the overall layout of the state and nation.

There have been a few interesting and significant studies done involving embossed, tactile maps and their use by blind persons. Berla (49) conducted a study to investigate the strategies and techniques employed by the blind in attempting to use such maps to improve their orientation and mobility skills. He reported that three major problems existed in the use of such maps:

I. First of all, the problem of production in getting the map prepared properly.

II. Secondly, the manner in which information was displayed on the map. It must be both understandable and simple for rapid interpretation.

III. The third problem involved the development of techniques to scan and read such a map in a minimal amount of time.

Previous research had indicated that more than two-thirds

of the blind children tested in primary and secondary school had very little success in attempting to read information from such embossed, tactile maps. However, because there was a strong indication that the reason for such poor results was inadequate knowledge and training in properly reading the material rather than the maps themselves, Berla performed his study to analyse and investigate strategies and methods used in the attempted interpretation of the maps.

Some of the more important findings of Berla's study were that before the blind child could be expected to successfully read such an embossed, tactile map, he must first be thoroughly trained in the skill of reading and interpreting symbols. The blind child must also develop the ability to read and orient to compass directions, as they would be involved in the interpretation of a map. It would also be necessary to begin with a series of very simple maps that had a direct application to a local area that was familiar to the blind child. With this approach the child would be able to apply the interpretation of the symbols to something that had real life meaning to him. He then could progress to more difficult material with greater chances for success.

In the reference to interviews held with experts in the use of embossed, tactile maps as teaching tools to improve the orientation skills of blind children, Berla stated:

> All of the subjects interviewed suggested that map reading begin at the third grade or lower. Many felt that maps could be introduced as early as kindergarten. Initially, children should be taught basic texture and shape discrimination skills and concepts.

> . . . .
> All agreed that tactual maps were necessary and important for the education of blind children and that when combined with a verbal description it provides the most meaningful education experience. (49:285-86)

Bentzen (48) tested the hypothesis that by use of a tactile map a blind person with good travel skills could successfully and independently travel in an unfamiliar area. In confirming the hypothesis, he reported:

> . . . no subject had difficulty in planning routes using the map. Subjects varied widely, however, in their style of using the map. Four subjects actively used both hands in route planning, while two used just one hand.
>
> . . . .
>
> Two subjects consistently relocated items on the map by using a deliberate co-ordinate system, e.g., by remembering about how far the item was from the left edge of the map and how far down from the top, they would bring two fingers together from the side and top to pinpoint the item. The other subjects used a landmark system, locating all items on the map in relation to an easily identified landmark, such as the largest building. All subjects were readily able to locate buildings on the map using the overlay labels and the co-ordinate system. No subject had prior experience with a tactual overlay; some had never before used grid co-ordinates. (48:251, 254)

Bentzen found that the error encountered most frequently in the map travel was failure to note intersecting sidewalks or driveways. Those subjects who encountered this problem attributed it to attempting to travel too fast. Incorrect judgement of distance travelled was another common error. All of the blind subjects involved in the study stated that they preferred the independent use of the maps to verbal directions from a sighted person in finding their way in an unfamiliar area.

An investigation by Johnson and Chang (59) studied a different aspect of the tactile map. Their work concerned the use of a portable

map with interchangeable parts that could be taken out into the street and used to simulate a variety of situations at first hand. Through the use of this type of tactile map, the parts could be rearranged to illustrate a large number of different field situations ranging from a specific intersection to general concepts about traffic flow and street layout. The parts themselves were cut to form the shapes of different types of intersections and city blocks. Some rectangular pieces had two corners rounded representing the curb returns found at street corners. Pieces for islands, median strips, and curb ramps were also made. Additional map pins were used to represent vertical objects such as fireplugs, light poles, mailboxes, and street signs.

As a result of their study with this new concept in the use of the tactile map, Johnson and Chang listed these advantages of the portable, tactile map with interchangeable parts:

I. Immediate construction of the problem. The problem could be diagrammed for tactual inspection right on the spot.

II. Ease of transporting the map. It took less space in the car and could be carried as the instructor walked with the student.

III. Time saved since permanent tactile maps required painstaking construction.

IV. The instructor could test the student's knowledge of the different concepts involved by having the student construct his interpretation of the local topography.

V. It was adaptable and could be refined or elaborated on by each user to suit his own needs.

In reference to their map and study, Johnson and Chang stated:

> A map is not a substitute for the long cane any more than a wiring diagram is a substitute for a radio, but the map does help the blind person fit what his cane tells him into an organized, dependable framework of meaning. (59:122)

Kidwell (61) in a thesis completed at the Massachusetts Institute of Technology investigated the design of a tactile map of the school campus. Key people involved in the design of this tactile map were blind students attending the school. One of the stated purposes of this particular study was to provide valid data that might help in eliminating some of the hesitation and reluctance on the part of many mobility instructors and educators in using tactile maps in their work with the blind. A favorite question often asked by this hesitant group is "How many blind people in the county can actually use such a map?" This study hoped to provide data to show that almost anyone could use them provided they had the motivation, intelligence, and patience to learn.

Most previous tactile maps had been constructed on either wood, paper, or a rubberized material. However, the map designed by Kidwell was produced on plastic (polyvinyl chloride). This material was found to be more durable, lighter in weight, and weatherproof.

One of the first steps in the design of this tactile map was to extensively interview the blind student population of the campus to learn how the blind students used the various environmental cues that they felt were the most meaningful and reliable in moving

about the campus. While there were individual variations, the physical campus was most strongly characterized for the majority of them in terms of circulation. In addition, the interviews tended to put more emphasis on negative environmental qualities than on their positive counterparts. Almost all of the students favored choosing a route that would minimize potential hazards, rather than enhance the variety of sensory stimulation of the trip. The most important of these potential hazards were potholes, cracked sidewalks, bikes and trucks blocking walkways, and such fixed obstacles as outdoor sculptures, trees, posts, etc. Most blind students agreed they would much prefer to take a longer route and avoid such obstacles.

All of the blind students interviewed agreed the most important tactual data that should be shown on the map of the campus were: a general outline of buildings, streets, sidewalks, steps and the direction of steps (up or down); location of various distinctive paving textures, major entrances to buildings and the specific entrance types; location of all vertical obstructions such as mailboxes, hedges, etc.; and access to restaurants and parking areas. In addition, the blind students expressed a strong desire to have compass direction clearly indicated on the map and the map so oriented that north was always located at the top.

After completion, the tactile map of the campus was taken out into the field and tested by the blind students involved in the study. All agreed that the tactile map provided them with a valuable mobility and orientation tool that could increase their independence in travel if they had the motivation, intelligence, and patience to

learn how to use it.

In a related study by Heidorn (78), the following question was investigated: Can blind children learn to read and interpret embossed drawings of human figures as they represented positions found in selected motor skills? The investigation utilized blind children as subjects and the experimental method of research was followed. According to Heidorn, based on an assessment of score values, the results of the study indicated that the blind children tested were able, with training, to read and interpret embossed representations of human figures depicting motor skills.

THE IMPORTANCE OF SELF-IMAGE TO THE BLIND CHILD

Although writers like Zahl (45) stated that the blind child is more like the sighted child than he is different, studies that have investigated the self-image concepts of blind children tend to point out that very real differences do exist that greatly affect the image the blind child has of himself. Many in the field of training and educating blind children believe that these differences can be minimized in the minds of both the sighted and the blind child by integrating the two at every possible opportunity. Others in the field tend to see very little magic in the integrative process that will necessarily improve the self-image concepts of the blind. Some indicate that just the opposite may more likely occur, that integration with the sighted child may only serve to emphasize the limitations of his handicap in the mind of the blind child.

Steinzor (72), in a very informative study that investigated the self-image concepts of young blind children, reported that their attitudes on vital issues pertaining to themselves tended to change dramatically as they matured from the elementary to the junior high school level.

Blind children at the elementary school level tended to put a considerable emphasis on the amount of vision they might possess that provided them with some degree of advantage over a more totally blind member of their class. From data obtained through extensive interviews, Steinzor reported that at this age level there seemed to be a definite prestige factor associated with the possession of residual vision. In the self-image evaluation of a blind child with some degree of remaining vision, he was not really blind at all. Only those members of his class who had less vision than himself or those who had no vision at all were truly blind. Steinzor reported that in interviews the child with some amount of remaining vision always took the initiative to bring this point to the attention of the interviewer. He quoted from an interview with one young blind girl:

> I like to play with both of them (sighted and blind children) but especially with the blind 'cause blind children I help them...'cause I can see more than the ones I am playing with. (72:308)

This same element of increased self-esteem associated with the possession of some degree of remaining vision was apparent in another interview:

> There are two classes in Room X, and in these classes are those who are smart: in Miss M.'s class are the smartest ones,

> they get out of school . . . And then there are other classes; they are dumb; they are not that dumb, but you know they don't know how to talk and they are really, really blind and all that, where we know how to see a little bit. (72:308)

Being completely blind for these children had connotations of the most negative type. They tended to save their self-esteem to the extent that they had something that was not blindness.

To many of the children at this age level, being called blind was an offense; being called blind was being called a bad name. One boy put it in a most touching way:

> They think that they wanna call me blind, but I am not blind; I can't see. (72:308)

Steinzor reported another factor that appeared to have considerable importance to the self-image of these blind children. This factor involved the ability to accomplish things independently. High self-esteem corresponded with the ability to do things by yourself, to be able to take a walk by yourself, to get a haircut by yourself, to go shopping and cross the street by yourself. In the self-image of these blind children, being able to do things was equivalent to being less blind. It would appear from the findings of this study that at this age group independent mobility and orientation were critically important to the self-image of blind children.

Steinzor brought out another important factor that affected the self-image evaluations of these elementary school age blind children. Although most of them did not object to being mixed in classrooms with sighted children, none of the blind children expressed a desire to be mixed in play with the sighted. On the contrary, many of them expressed a strong preference for playing with other

blind children. Apparently, all children including the blind have a strong need and desire to succeed at play. When the blind child competes in play with the sighted child, he seldom succeeds and when he does it is usually by the means of being led around by the hand by the sighted. The implication here was that when the blind child mixed in play with the sighted his feelings of being different or inferior were emphasized, while in participating with other blind children this negative self-evaluation was avoided. In this particular aspect, the study tended to indicate that at this age the avoidance of those experiences that emphasized the limitations of his blindness was also of critical importance to the self-image of the blind child.

As part of the study, Steinzor asked each child interviewed the question "How do you imagine your life will be ten to fifteen years from now?" The answers received most often referred to some type of work position (teacher, mechanic, hairdresser, etc.) and often included being married. However, very little distinction was made by the children at this age level between those positions that could be held by a blind person and those that could not. Many of the blind children selected positions that were beyond their limitations such as bus driver, pilot, and fashion designer. This reaction tended to coincide with their previous self-evaluations that rejected their blindness in favor of any degree of remaining vision, and that aspiring to be able to do the same types of jobs that the sighted could do tended to make them less blind.

As a second part of this study, Steinzor conducted a similar series of interviews with blind children of the junior high school level and in many respects the results were very different. At this age level there tended to be much less emphasis put on the amount of remaining vision present and a much greater acceptance of the fact of their blindness. The prestige factor associated with the amount of remaining vision appeared to be of no great importance to the self-image of the blind children at this age level. Of much greater importance to them was the acceptance of their blindness and the realization that they would live their lives in a world dominated by a sighted majority. To a large extent they had accepted the fact that they would be required to meet the standards set by the sighted majority.

From the interviews conducted with this junior high school level, there tended to be a much greater need by the blind children for a feeling of respect and equality from their sighted peers. The self-image of the blind at this age level seemed to suffer when such respect and equality were not received. As one young blind boy put it:

> With sighted persons when you first meet them and they find out you are blind, they start acting differently with you than they would with another person. They are afraid of hurting your feelings and when they are afraid of doing that then you just don't talk to them 'cause you both feel pretty bad about it.
> . . . .
> I guess they just can't help themselves; I don't blame them; they probably think that a blind person does not get much. Because of their sight they probably want to do a little extra . . . . I might be like that. (72:310)

Answers to the question "How do you imagine your life will be ten to fifteen years from now?" again reflected a much greater

acceptance of the fact of their handicap. Most youngsters tended to select life careers that fell within the limitations of their blindness.

According to Steinzor, the following are of great importance to the self-image of the blind child at the junior high school level:

> The ability to recognize their handicaps and to accept them, their aspirations to find a place in a world based on sight, their ability to identify themselves as persons rather than as blind, and the strength not to gloss over the differences between sightedness and blindness . . . . (72:311)

Resnick (70), in reference to the importance of self-image to the blind child, wrote that like all children the blind child needs to feel that he belongs, that he is accepted as a person capable not only of self-help but also of contributing to the pleasure and comfort of those whom he comes in contact with each day. Their attitudes and expectations influence the way he perceives himself. Expectations at both work and play that are too low will engender feelings of indifference and helplessness in many blind children. Some attempt to compensate for such feelings of inadequacy by resorting to acts of aggression and hostility, but unfortunately most blind children will tend to accept these low levels of expectations and unless otherwise motivated they will develop a self-image based on withdrawal and passivity. Blindness in itself is not the determining factor in the child's development and self-image. Rather, failure to know what to expect of a blind child or how to encourage his optimal development become the factors that limit his potential. All too frequently, both his development and self-image are tragically warped and restricted because of the tendency to assume that limited function is the necessary and inevitable result of his blindness.

Self-image for the blind child is critically dependent on the willingness of the sighted majority to recognize his true potential, for this will largely determine what he is today and will become tomorrow.

Lowenfeld (34) suggested that one of the most important factors affecting the type of self-image that a blind child develops is his own independence in getting about without assistance. There are few if any accomplishments more satisfying to the ego of the blind than to be able to move about safely and effectively by themselves. Thus it appears that positive self-image and effective orientation and mobility are very strongly related. Further, it may well be that one of the most effective ways to improve self-image is by developing greater independence in successful mobility.

Cratty wrote:

> The maturing child perceives his body as a vehicle for motor performance. Thus it is reasonable to assume that his feelings about himself are related to the quality and quantity of movement he perceives his body capable of making. (21:7)

THE RELATIONSHIP BETWEEN EFFECTIVE ORIENTATION AND MOBILITY, AND SUCCESSFUL INTEGRATION

Although much individual opinion has been expressed in relation to effective mobility and successful integration with peer groups by the blind, very little actual research has been done to substantiate or reject this individual opinion. Some of the experts in the field believe that there is a very significant relationship between the degree of orientation and mobility skill a blind person possesses and the amount of success he will have in effectively integrating into a sighted peer group.

Jones (58), in one of the few studies that has attempted to investigate this area, developed some interesting results. This study involved an investigation of the attitudes of sighted children toward blind children in an elementary school classroom situation where the sighted children were in a very distinct majority. The principal question of the investigation was the degree of acceptance of the blind child by his sighted peers in social, academic, and physical activities.

One of the results of this study proposed that an interaction strain tends to exist in relationships between the sighted and the blind. The central theme of this interaction strain was that the sighted felt discomfort in face-to-face relationships with the blind. As a result, in many instances, interactions with the blind were avoided or at least minimized.

In interviews with the sighted children, Jones asked questions like some of the following:

I. Would you invite this particular child to a party at your home?

II. Would you like to eat your lunch with him?

III. Would you be happy if that child was absent from school?

IV. Would you choose him as captain of the ball team?

V. Would you like to play with him on the playground?

The results of the interviews indicated that for the most part the blind children were rated as less acceptable on most of these items. However, there were exceptions in which some blind

children were accepted by the sighted group and in most of these cases the blind children who were accepted tended to be personally congenial and able to function independently both in work and in play.

The study by Jones concluded with the recommendation that one of the best methods for increasing the prospects for a more successful integration of the blind child into sighted groups of his peers was to develop programs which actually attempted to improve both physical independence and social behavior patterns of young blind children.

Buell (15) wrote, in reference to independent mobility and effective integration, that those blind children who become efficient in independent play are more successful in their integration at both the family and community levels. Effective mobility and orientation help the blind child overcome fears and feelings of helplessness, and they also tend to develop better habits of health.

According to Buell, encouraging independent mobility in blind children will have many beneficial results.

> This will help them gain the self-confidence they need so much. Many of the visually handicapped suffer from introversion and other maladjusted types of personality which makes it difficult for them to meet normal people on an equal social footing. (15:21)

Buell wrote that the blind child must be especially capable in independence in play before he will be accepted by sighted children, who are apt to be impatient with him if he tends to slow up their normal play activities. By being effective in his mobility and orientation in play, the blind child will find both greater success and acceptance with his sighted classmates.

Lowenfeld stated:

> . . . the deepest and most fundamental needs of blind children are a rich and intimate experience of common things, and a direct acquaintance with the many characters that move across the scenes of daily life . . . .
>
> . . . .
>
> . . . the children must learn to know persons and things in terms of their own sensory powers, and to meet the situations in which they occur on an independent footing. (34:172)

Bernardo, referring to the use of design to develop those types of environments that will stimulate the blind to master the skills of independent mobility, reported:

> If the goal to be achieved is the integration of the blind minority into the sighted majority, then the designer can propose a "developmental sequence of environments," rather than a single one that is either protective or hostile. In this way, the environment (social as well as physical) could be protective when it has to be protective (for young children or for the recent adventitiously blind), and could progressively change to introduce the individual thereby into more and more difficult-to-cope-with environments. (50:265)

This review of literature has indicated that as the blind child grows and matures he tends to develop the expectation that he will be accepted on an equal basis with the sighted. He imagines that he will be welcomed as one of the group and absorbed into the social milieu like a sighted person. Unfortunately, the sighted do not tend to mingle comfortably with the blind and the blind child soon recognizes these feelings of discomfort. The sighted child, who in the beginning might enjoy the novelty of guiding the blind person around, eventually rebells against this imposition on his time and freedom.

Fraleigh (77) wrote that skillful and independent participation in both work and play will generally enhance peer group integration and produce better adjustment. In contrast, unskilled

performance will most often lead to further group rejection and increase individual feelings of inferiority. In addition, those who are skillful and effective in independent participation will tend to continue to participate thus increasing their degree of integration, while those who are unskilled or less skillful will tend to stop trying and withdraw from further attempts at integration with the sighted. Thus, it would appear that there is a very significant relationship between effective orientation and mobility, and the successful integration of the blind person into groups of his sighted peer.

Chapter III

RESEARCH METHOD AND PROCEDURES

This chapter presents the method and procedures used to collect the data for the study. The chapter was organized under the following sections:

I. The Method
    A. The Survey
    B. Tools for Gathering the Data
        1. The play environment
        2. The questionnaire
        3. The sample
II. The Procedures

THE METHOD

The research method used in this study was the philosophical method in which clear-cut criteria were developed for evaluation by a select sample of qualified people. This method was selected because it fit the conditions of the problem investigated more closely than the other general methods of research available.

Clarke, in reference to the various methods for solving research problems, stated:

> Each method is appropriate to the nature of a particular problem.
>
> . . . .
>
> Of what use is the philosophical method? Certainly it is utilized for resolving problems, especially problems that currently cannot be solved by other means . . . . The philosophical method

> can be applied to a problem at once without protracted experimentation.
>
> . . . .
>
> Philosophical studies are needed in education, which, of course includes physical education, recreation, and health, and they should be dedicated to the task of establishing the vision of ultimate ends. (20:82, 83)

In this study the philosophical method of research was used by developing clear-cut design elements for evaluation in the form of a play environment for blind children. The evaluation to be made was how successful the various design elements were in helping the blind child to develop through his play activity a greater degree of mobility and orientation capability.

The Survey

The subjects involved in the survey conducted for this study were a select sample of people qualified through actual professional experience in training and educating blind children. Two of the basic assumptions of this study were that valid data could be obtained by using this philosophical method of research in evaluating the effectiveness of the various design elements that made up the play environment, and that these subjects who had actually worked in training and educating blind children would be qualified to make such an evaluation.

The survey itself consisted of a series of interviews with the subjects that comprised this select sample of qualified people. At each interview the subject was asked to watch and listen to a recorded, slide presentation that clearly showed how the play environment for blind children was planned and how each design element to be evaluated would operate. Each interviewee was also

presented with a questionnaire form and asked at specific points in the recorded narration to make an evaluation based on his professional judgement of the degree of effectiveness of the various design elements presented to help the blind child to develop through his play activity a greater degree of mobility and orientation capability. The data obtained at these interviews were the basic material analysed and interpreted in this study.

Tools for Gathering the Data

Before the survey could be conducted, it was first necessary to construct three very important tools that were needed to gather the data.

The play environment. From the review of related literature, the investigator developed a number of basic concepts that in his opinion might be used in a specially designed play environment for blind children. The purpose of these basic concepts was to provide new ways to motivate the blind child to learn in his play activity the mobility and orientation skills he must learn to become an independent, able individual. However, to present these design elements as concepts to be evaluated by a select sample of qualified people, it was necessary to carefully plan and develop the play environment in such a clear-cut, understandable form that there was no doubt that it would be obvious to the subjects making up the sample as to what they were being asked to evaluate. To provide such a data gathering tool, the play environment was developed as a pictorial, slide presentation in which each design element to be evaluated was clearly pointed out and fully explained. A recorded narration was

included with the slide presentation that further explained what was being shown on the slide. The interviewee was requested to make evaluations at specific points in the presentation as to the degree of effectiveness of particular design elements in the play environment to help the blind child develop in his play a greater amount of skill in mobility and orientation.

The basic material used in the planning and designing of this play environment was obtained from the ideas and concepts that developed as a result of the review of related literature in this study. Both the pictorial presentation and the recorded narration of the play environment made extensive use of the research work completed by previous investigators in this particular area of concern. A complete copy of both the pictorial slide material and a verbatim record of the narration used in conducting the interviews are included in the Appendix (pages 119-65) of this thesis.

The questionnaire. In order to record the evaluations made by the select sample of interviewees, a structured questionnaire was developed for use with the recorded, slide presentation. This questionnaire listed the specific design elements to be evaluated and provided a rating scale choice by which each interviewee was asked to indicate to what degree he thought the various design elements were effective in helping the blind child to develop in his play a greater mobility and orientation capability.

Oppenheim (39) and others were consulted for the proper procedures to follow in the construction of a questionnaire design. In order to provide each interviewee with the basic background

information he would need to understand what the study was all about, the questionnaire included brief statements concerning the purpose of and need for the evaluation. In addition, the definitions of important words were included so that the interviewee would know and understand just how these important words were being defined for the purpose of this particular study. Complete instructions for filling out the questionnaire were also given, including a detailed explanation of the rating scale used. There were four possible choices that could be made on the rating scale ranging from very effective to very ineffective, and, after consulting several different sources on the proper design of a rating scale, it was decided to include a fifth possible choice that instructed the interviewee to leave blank any of the evaluations he was not sure of. According to several authorities, this fifth choice provided the evaluator with the means to avoid making an enforced choice concerning any of the design elements that might involve indecision on the part of the interviewee. Finally, to obtain any further input these qualified people might have that could provide additional data, a section for additional comments was included as part of the design of the questionnaire.

Because this questionnaire was constructed for use by a select sample of people qualified in training and educating blind children, the terminology used was the type that would be completely understandable and familiar to the subjects. Each evaluation requested was stated in clear-cut terms to avoid ambiguity. To make the evaluation, all the interviewee was required to do was to check one of four possible spaces after each design element, or to leave

all four spaces blank.

As time was an important factor in both the design of the questionnaire and the length of the scheduled interview, it was decided to limit the entire session to a period of time not to exceed thirty minutes. Most authorities consulted agreed that this was the maximum time that should be taken for such an interview. In this period of time, the interviewer was required to present the questionnaire to the particular interviewee involved, to set up and present the recorded, slide presentation of the play environment, to clarify any points that came up concerning the evaluations to be made, and to answer any other questions that the interviewee might ask. A complete copy of the structured questionnaire used to gather the data in this study is included in the Appendix (pages 119-65) of this thesis.

Before any of the interviews were conducted, both the recorded, slide presentation and the questionnaire were pretested by a person qualified in training and educating of blind children to obtain suggestions concerning the possible ways in which these data gathering tools might be improved for greater understanding and effectiveness.

The sample. Of critical importance to this study were both the defining and the proper selection of the sample. For the purposes of this study, the sample used was defined as those qualified people selected as interviewees in the study who had the type of experience in training and educating blind children that qualified them to make an evaluation of the effectiveness of the design elements in the play environment proposed, to help the blind child to develop in

play a greater degree of mobility and orientation skill.

Once the sample itself was defined and the qualifications of the subjects established, it was necessary to then set a geographical limit to the area that was to be covered in conducting interviews. As with all studies, it was obvious that there would be limitations on the amount of time and/or money that could be expended. In light of limitations, the study was delimited to the time (spring, 1973) and to the place (the geographical area extending from Sacramento to the San Francisco and Oakland bay area in California). As a consequence of this time and place delimitation, a further limitation of the study and the sample was the number of qualified people available for interview within this area.

After investigating various methods to use in selecting a proper sample, it was decided that one effective method was to find a well-known professional person working in the field of training and educating blind children who had a broad background in the various aspects of the field, and who also had a wide and thorough knowledge of the professional people in the field who lived or worked within the geographical limits set. Needless to say, these professional people must possess the qualifications required of prospective interviewees. By using the assistance and input obtained from such a well-known person, it would be possible to establish how many qualified subjects existed within the area to be surveyed and which of these would be best to select for the sample.

After researching most of the leaders in the field residing within the geographical area established for this study, such a well-

known professional person was found who consented to assist the writer in selecting a proper sample to conduct the investigation. This particular professional person, although legally blind himself, had worked in the field for the last fifteen years and had a complete knowledge of virtually all of the available qualified subjects.

From information obtained in conversations with this well-known professional consultant, it was established that the available qualified subjects fell into four vocational categories:

I. Orientation and Mobility Specialists for the Blind.

II. Teachers for Blind Children at a Special Resident School for the Blind.

III. Teachers for Handicapped Children at a Special Nonresident School for the Handicapped that included Blind Children.

IV. Teachers for Visually Handicapped Children at Public Schools.

After discussions with both the thesis chairman and the professional consultant, the writer developed the following guidelines to use in selecting the final sample:

I. The interviewees selected for the survey would be those taken from a list of qualified people agreed upon by the thesis chairman, the professional consultant, and the writer.

II. Those interviewees selected from the list would be as evenly distributed among the four vocational categories as possible.

III. Those interviewees selected from the list would be those

with the best combination of greatest amount of experience and most recent experience in working with blind children.

IV. Needless to say, only those subjects were selected from the list who were willing to participate as interviewees in this study.

Using the above guidelines as a reference, twenty-three qualified people were selected from the list who agreed to participate in the study as interviewees. These twenty-three people with professional experience in training and educating blind children constituted the select sample used in the evaluation performed in this study. The names and positions of the members of the sample are included in the Bibliography (pages 110-18) of this thesis.

THE PROCEDURES

Once the three basic tools for gathering the data (the recorded slide presentation of the play environment, the questionnaire, and the sample) were developed it was then merely a matter of setting up a schedule of interviews at the convenience of the interviewees and gathering the data. Each of the interviews was arranged by means of an introductory telephone call made by the investigator in which the prospective interviewee was given a brief summary of the study and what would be required of him if he agreed to participate. All of the twenty-three interviewees were interviewed at their schools or offices. Nearly ninety percent of the people initially contacted agreed to participate in the evaluation. Of those who did not agree to participate, over half of them recommended another qualified

person who could be used as a substitute.

Nine separate interviews were conducted to obtain the evaluations from the twenty-three qualified people involved in the select sample. The chronological order in which these interviews were held is as shown below:

Location	Interviewee
Sacramento Society for the Blind	(90, 96, 98)
San Francisco Lighthouse for the Blind	(95)
American Foundation for the Blind (San Francisco)	(103)
California State University (San Francisco)	(104)
University of California (Davis)	(93)
Alameda County Department of Education (Hayward)	(86, 89, 100)
Recreation Center for the Handicapped (San Francisco)	(102)
Starr King Exceptional School (Carmichael)	(83, 84, 85, 91, 99)
California School for the Blind (Berkeley)	(82, 87, 88, 92, 94, 97, 101)

These nine separate interviews were held over a four-week period in April and May of 1973. All of the interviews were conducted by the writer of this study. The same basic procedure was followed at each of the interviews and the sequence followed was as indicated below:

I. The interviewer arrived at the office of the interviewee at the scheduled time. The interviewer had previously arranged for

the interview by means of a telephone call at which time the interviewee consented to participate in the study and was given a brief description of the purpose and procedure of the evaluation.

II. The interviewer presented a questionnaire form to the interviewee and requested that he read it over while the interviewer proceeded to set up the equipment for the recorded, slide presentation.

III. When the equipment was ready for the presentation, the interviewer asked if there were any questions the interviewee would like to ask concerning the questionnaire before the presentation began. The interviewer answered whatever questions were asked and then proceeded to show the recorded, slide presentation.

IV. At the conclusion of the presentation, the interviewer asked if there were any additional questions or points to be clarified. When these were taken care of, the interviewer thanked the interviewee for his participation and concluded the interview.

Chapter IV

RESULTS OF THE STUDY

Clarke, in reference to the reporting of research results, stated:

> Usually, the research results are contained in a single chapter . . . .
>
> . . . .
>
> Philosophical reports center around hypotheses or principles with rational support from existing evidence and its critical appraisal.
>
> . . . .
>
> . . . the researcher presents the salient features of the results and interprets for the reader what the facts mean. (20:437-38)

In light of the above statement, this chapter presents the results of the study. The chapter was organized under the following sections:

I. Analysis of the Data
  A. The Presentation of the Data
  B. The Findings
    1. Ratings
    2. Additional comments
  C. Interpretation of the Findings

ANALYSIS OF THE DATA

Because, at the time the questionnaire was constructed a careful consideration was given to the manner in which the data collected would be analysed, it was a relatively simple matter to compile and summarize the final results. The questionnaire form was designed to gather two types of data:

I. The evaluation in degree of effectiveness according to

five possible choices on a rating scale.

II. Any additional comments that the interviewee wanted to offer in relation to the study.

The first type of data obtained was most logically compiled and summarized in the form of a series of numerical percentage tables that provided the means for making an analysis by comparison between the similarities and differences of evaluations made by the different vocational categories represented in the select sample surveyed.

The second type of data obtained required a very different type of analysis. Because the data obtained by additional comments made by the interviewees were of a very wide range of relevancy in relation to the primary evaluation involved in the study, the writer employed a method of critical appraisal to select from these additional data those that seemed to be most pertinent to the basic purpose of the study. These additional pertinent data were then analysed by an evaluation that considered all applicable facets of each additional comment made.

The Presentation of the Data

The evaluations in degree of effectiveness according to five possible choices on a rating scale were summarized and presented in the form of the five numerical percentage tables included in this chapter:

TABLE I. An Analysis of Evaluations made by All Interviewees.

TABLE II. An Analysis of Evaluations made by Orientation and Mobility Specialists for the Blind.

TABLE III. An Analysis of Evaluations made by Teachers for

Blind Children at a Special Resident School

TABLE IV. An Analysis of Evaluations made by Teachers for Handicapped Children at a Special Nonresident School.

TABLE V. An Analysis of Evaluations made by Teachers for Visually Handicapped Children at Public Schools.

The additional pertinent data obtained by added comments made by the interviewees were summarized and presented in the form of the following eleven logical categories for evaluation:

I. Additional Pertinent Comments relating to the degree of Effectiveness of the Embossed Map of the Play Environment.

II. Additional Pertinent Comments relating to the degree of Effectiveness of the Activity Play Court.

III. Additional Pertinent Comments relating to the degree of Effectiveness of the Roll and Tumble Hill Play Court.

IV. Additional Pertinent Comments relating to the degree of Effectiveness of the Giant Jigsaw Play Court.

V. Additional Pertinent Comments relating to the degree of Effectiveness of the Sensory Obstacle Play Course.

VI. Additional Pertinent Comments relating to the degree of Effectiveness of the Kid Garden Play Court.

VII. Additional Pertinent Comments relating to the degree of Effectiveness of the Tactile Kid Town Play Court.

VIII. Additional Pertinent Comments relating to the degree of Effectiveness of the Jet Plane Play Court.

IX. Additional Pertinent Comments relating to the degree of Effectiveness of the Artist's Corner Play Court.

X. Additional Pertinent Comments relating to the degree of Effectiveness of the Skater's Rink Play Court.

XI. Additional Pertinent Comments relating to the degree of Effectiveness of the Play Environment as a Complete Unit.

The Findings

Ratings. An analysis of the data presented in the numerical percentage tables developed the following findings.

TABLE I, page 59. An Analysis of Evaluations made by All Interviewees.

In light of the fact that the original hypothesis stated that a majority of a sample of people qualified in training and educating blind children would agree that the play environment designed for this study would be rated at least effective on the rating scale, an analysis of the evaluations made by all of the interviewees involved in the study indicated that not only did each of the ten different design elements that made up the play environment receive a rating of at least effective, but in addition the play environment as a complete unit also received a rating of at least effective.

However, considering the fact that this select sample was made up of people highly qualified in training and educating blind children, the analysis of the evaluations made by all of the interviewees indicated a considerable difference of opinion in some instances concerning the degree of effectiveness of some of the different design elements evaluated.

TABLE I

AN ANALYSIS OF EVALUATIONS MADE BY ALL INTERVIEWERS

Play Environment Design Element Evaluated	Evaluation in Percent of Effectiveness of Each Design Element to Accomplish its Purpose				
	Very Effective	Effective	Not Effective	Very Ineffective	Undecided
1. Embossed Map of Play Environment	17%	44%	30%	0	9%
2. Activity Court	30%	53%	17%	0	0
3. Roll and Tumble Hill	44%	48%	4%	0	4%
4. Giant Jigsaw	4%	48%	30%	9%	9%
5. Sensory Obstacle Course	44%	35%	13%	4%	4%
6. Kid Garden	17%	48%	35%	0	0
7. Tactile Kid Town	17%	70%	9%	0	4%
8. Jet Plane	9%	61%	30%	0	0
9. Artist's Corner	13%	66%	13%	4%	4%
10. Skater's Rink	26%	44%	17%	0	13%
11. Play Environment as a Complete Unit	17%	61%	9%	0	13%

As Table I indicates, the roll and tumble hill play court received the highest rating of effective or better (92 percent) of the evaluations made by all of the interviewees. In this case there was considerable agreement among the select sample in their evaluation. In sharp contrast to this, the giant jigsaw play court received the highest rating of less than effective (39 percent) with an additional 9 percent of the interviewees undecided concerning its effectiveness. This left a very narrow majority of 52 percent rating it as effective or better. In this case there was a considerable amount of disagreement among the select sample in their evaluation.

Although some degree of difference in opinion was expected even among the professionals who made up this select sample of interviewees, still it was interesting to note in the analysis of Table I that of the ten design elements making up the play environment that were evaluated, four of them were rated less than effective by approximately one third of the total sample. Perhaps one of the most contradictory aspects of this analysis was the evaluation of the embossed map of the play environment. As indicated in the review of related literature in this study, a considerable amount of research had been done that investigated the use of embossed maps in helping blind people to improve their orientation and mobility skills. To the writer's knowledge, everyone of these investigations had concluded that such maps could be very effective in improving orientation and mobility skills for the blind. However, 30 percent of this select sample rated their use in this play environment as less than effective and another 9 percent were undecided about their effectiveness.

In regard to the evaluation of the play environment as a complete unit, 78 percent of the total select sample rated it as effective or better, 9 percent thought it was less than effective, and 13 percent were undecided about its effectiveness.

TABLE II, page 62. An Analysis of Evaluations made by Orientation and Mobility Specialists for the Blind.

In the opinion of the writer of this study, perhaps the most qualified of the four vocational groups that made up the select sample was the orientation and mobility specialists for the blind. It would seem that this group possessed the most specific knowledge required to make an evaluation of the degree of effectiveness of a design element to help the blind child to develop a greater degree of orientation and mobility skill.

In light of the original hypothesis that required a rating of at least effective on the rating scale, an analysis of the evaluations made by this vocational group indicated that of the ten different design elements that made up the play environment, seven of them received a majority rating of effective or better while the other three did not. However, in the cases of those three design elements that did not receive a majority rating of at least effective there was a considerable difference of opinion among this very specialized group of experts as to their degree of effectiveness.

As Table II indicates, the two design elements that received the highest rating of effective or better were the roll and tumble hill play court (100 percent) and the tactile kid town play court (100 percent). In these two cases there was a very definite agreement

TABLE II

AN ANALYSIS OF EVALUATIONS MADE BY ORIENTATION AND MOBILITY SPECIALISTS FOR THE BLIND

Play Environment Design Element Evaluated	Evaluation in Percent of Effectiveness of Each Design Element to Accomplish its Purpose				
	Very Effective	Effective	Not Effective	Very Ineffective	Undecided
1. Embossed Map of Play Environment	25%	50%	25%	0	0
2. Activity Court	25%	50%	25%	0	0
3. Roll and Tumble Hill	50%	50%	0	0	0
4. Giant Jigsaw	0	50%	50%	0	0
5. Sensory Obstacle Course	50%	25%	25%	0	0
6. Kid Garden	0	50%	50%	0	0
7. Tactile Kid Town	25%	75%	0	0	0
8. Jet Plane	0	50%	50%	0	0
9. Artist's Corner	0	75%	25%	0	0
10. Skater's Rink	0	75%	25%	0	0
11. Play Environment as a Complete Unit	0	100%	0	0	0

among this vocational group of the select sample in their evaluation. Again, in sharp contrast to this, the giant jigsaw play court, the kid garden play court, and the jet plane play court each received a rating of effective by half of the orientation and mobility specialists and not effective by the other half. Needless to say, in these three cases there were considerable differences of opinion in the evaluations made.

In regard to the evaluation of the embossed map of the play environment, this very qualified group of specialists tended to accept and agree with the research findings in the field by the fact that 75 percent of them rated the use of the embossed map as effective or better. Another important aspect of the ratings made by this vocational group was that they showed no indication of any indecision about their evaluations. As Table II shows, all ratings were made as either very effective, effective, or not effective.

As to the evaluation of the play environment as a complete unit, 100 percent of this group of orientation and mobility specialists expressed the highest possible degree of agreement among themselves by giving the play environment the exact same rating of effective.

Table III, page 64. An Analysis of Evaluations made by Teachers for Blind Children at a Special Resident School.

This category of the four vocational groups surveyed in the select sample produced one of the most surprising results of the study. Even though it was the obligation of the investigator to collect and analyse the data in an impartial and unbiased manner,

TABLE III

AN ANALYSIS OF EVALUATIONS MADE BY TEACHERS FOR BLIND CHILDREN AT A SPECIAL RESIDENT SCHOOL

Play Environment Design Element Evaluated	Evaluation in Percent of Effectiveness of Each Design Element to Accomplish its Purpose				
	Very Effective	Effective	Not Effective	Very Ineffective	Undecided
1. Embossed Map of Play Environment	16%	17%	50%	0	17%
2. Activity Court	16%	34%	50%	0	0
3. Roll and Tumble Hill	16%	51%	16%	0	17%
4. Giant Jigsaw	0	34%	17%	33%	16%
5. Sensory Obstacle Course	16%	51%	0	16%	17%
6. Kid Garden	0	33%	67%	0	0
7. Tactile Kid Town	0	67%	17%	0	16%
8. Jet Plane	0	67%	33%	0	0
9. Artist's Corner	0	67%	17%	0	16%
10. Skater's Rink	16%	34%	17%	16%	17%
11. Play Environment as a Complete Unit	16%	34%	34%	0	16%

still in some cases there was an expectation on the part of the investigator as to how the results might turn out. It was the opinion of this writer, before the data were collected and analysed, that this particular vocational group would probably provide the most solid support in favor of the play environment evaluated. However, an examination of Table III and an unbiased analysis of the data it presented tended to strongly reject this preconception.

In light of the original hypothesis that required a rating of at least effective on the rating scale, an analysis of the evaluations made by this vocational group of specialized teachers for blind children indicated that of the ten different design elements that made up the play environment, only five of them received a rating of effective or better while the other five did not. One important reason for the lower rating made by this particular group was that many of them were indecisive as interviewees in trying to make an evaluation of the degree of effectiveness of the various design elements. In sharp contrast to the group of orientation and mobility specialists, at least 16 percent of this group of teachers for blind children was undecided concerning the effectiveness of seven of the ten design elements evaluated.

As Table III indicates, the five design elements that received the highest rating of effective or better were the roll and tumble hill play court, the sensory obstacle play course, the tactile kid town play court, the jet plane play court, and the artist's corner play court. All five of these were highest in their rating of effective or better because all received the exact same

rating of 67 percent. However, even in the cases of these five there were at least 16 percent of the group who were undecided about their effectiveness in four of the five evaluations. The design element that received the highest rating of less than effective was the kid garden play court (67 percent). In this case, one third of the teachers rated it as effective and two thirds rated it as not effective.

Again, the evaluations made of the effectiveness of the embossed map of the play environment by this group of specialized teachers tended to reject the research findings in this area. Only 33 percent of the teachers rated the use of the embossed map as effective or better, while 50 percent rated it as less than effective. Another 17 percent were undecided about its effectiveness.

A comparison between the evaluations made by the group of orientation and mobility specialists and this second group of specialized teachers for blind children indicated both an agreement and disagreement in their ratings. The two design elements that received the highest rating of effective or better by the orientation and mobility specialists were also given the highest rating by this group of specialized teachers. Also, two of the three design elements that were rated less than effective by the group of orientation and mobility specialists were likewise rated less than effective by this vocational group of teachers. However, there were major areas of disagreement between the two vocational groups in regard to their ratings of the effectiveness of the embossed map of the play environment, the activity play court, the jet plane play court,

and the skater's rink play court. In addition, one of the major differences between the two groups was the difference in the amount of indecision in making their evaluations.

With regard to the evaluation of the play environment as a complete unit, 50 percent of this group of teachers rated it as effective or better, 34 percent rated it as less than effective, and 16 percent were undecided about its effectiveness. Needless to say, in reference to this particular group of the select sample, less than a majority rated the play environment at least effective. In sharp contrast, the first group of orientation and mobility specialists gave the play environment a 100 percent rating of effective.

TABLE IV, page 68. An Analysis of Evaluations made by Teachers for Handicapped Children at a Special Nonresident School.

The third category of the four vocational groups surveyed in the select sample differed sharply in their evaluations in comparison to the first two groups. In light of the original hypothesis that required a rating of at least effective, an analysis of the evaluations made by this vocational group of specialized teachers for handicapped children indicated that all ten of the designed elements rated received an evaluation of effective or better.

As the two vocational groups in the select sample who were most similar, both in their education and experience, the specialized teachers at the resident school and the specialized teachers at the nonresident school might have been predicted to have been very

TABLE IV

AN ANALYSIS OF EVALUATIONS MADE BY TEACHERS FOR HANDICAPPED CHILDREN AT A SPECIAL NONRESIDENT SCHOOL

Play Environment Design Element Evaluated	Evaluation in Percent of Effectiveness of Each Design Element to Accomplish its Purpose				
	Very Effective	Effective	Not Effective	Very Ineffective	Undecided
1. Embossed Map of Play Environment	25%	75%	0	0	0
2. Activity Court	75%	25%	0	0	0
3. Roll and Tumble Hill	50%	50%	0	0	0
4. Giant Jigsaw	0	100%	0	0	0
5. Sensory Obstacle Course	75%	25%	0	0	0
6. Kid Garden	50%	50%	0	0	0
7. Tactile Kid Town	0	100%	0	0	0
8. Jet Plane	25%	50%	25%	0	0
9. Artist's Corner	50%	50%	0	0	0
10. Skater's Rink	75%	25%	0	0	0
11. Play Environment as a Complete Unit	75%	25%	0	0	0

similar in their rating tendencies in regard to the play environment evaluated in this study. However, an analysis of the data presented in Tables III and IV showed that such was definitely not the case. Whereas the specialized teachers at the resident school rated only five of the ten design elements as effective or better, the specialized teachers at the nonresident rated all ten design elements as effective or better. In addition, the greater degree of indecision on the part of the group of teachers in the second vocational category was entirely lacking in this third group of specialized teachers, and not in a single case did any of the teachers for handicapped children indicate an undecided reaction in their evaluations.

Of the four vocational groups involved in the study, this group of specialized teachers for handicapped children gave the design elements and the play environment as a complete unit the highest rating of all. Nine of the ten design elements were rated by 100 percent as effective or better and the remaining one was rated by 75 percent as effective or better. Also, the play environment as a complete unit was given an evaluation of effective or better by 100 percent of the interviewees in this third vocational group.

A comparison between the evaluations made by the first three vocational groups in the select sample indicated that this third group of teachers for handicapped children at a special nonresident school rated both the individual design elements and the play environment as a complete unit in a manner much more similar to the ratings made by the group of orientation and mobility specialists

than to the ratings made by their fellow teachers for blind children at a special resident school. The ratings of this third group in regard to the embossed map of the play environment also tended to agree with the first vocational group of orientation and mobility specialists in that 100 percent of the interviewees in rating the embossed map as effective or better indicated an acceptance and support of the research findings in this area.

A comparison of the evaluations made of the play environment as a complete unit by these first three vocational groups again emphasized the similarities between groups one and three, and the differences between these two groups and vocational group two. One hundred percent of the interviewees in groups one and three rated the play environment as effective or better, while only 50 percent of the interviewees in group two gave the same rating.

TABLE V, page 71. An Analysis of Evaluations made by Teachers for Visually Handicapped Children at Public Schools.

The fourth category of the vocational groups surveyed in the study produced another surprising result. As a consequence of reviewing the related literature in this investigation, the writer tended to expect that the teachers in this particular vocational group of the select sample would probably be least likely to accept the concept of a special play environment for blind children. The reason for this preconception was that much of the literature reviewed tended to stress the importance of integrating the blind child at every possible opportunity with the sighted child and especially so in the public school environment. The opinion of

TABLE V

AN ANALYSIS OF EVALUATIONS MADE BY TEACHERS FOR VISUALLY HANDICAPPED CHILDREN AT PUBLIC SCHOOLS

Play Environment Design Element Evaluated	Evaluation in Percent of Effectiveness of Each Design Element to Accomplish its Purpose				
	Very Effective	Effective	Not Effective	Very Ineffective	Undecided
1. Embossed Map of Play Environment	0	25%	75%	0	0
2. Activity Court	25%	75%	0	0	0
3. Roll and Tumble Hill	75%	25%	0	0	0
4. Giant Jigsaw	25%	0	75%	0	0
5. Sensory Obstacle Course	25%	50%	25%	0	0
6. Kid Garden	25%	25%	50%	0	0
7. Tactile Kid Town	25%	50%	25%	0	0
8. Jet Plane	0	75%	25%	0	0
9. Artist's Corner	0	100%	0	0	0
10. Skater's Rink	0	75%	25%	0	0
11. Play Environment as a Complete Unit	0	75%	0	0	25%

some of the teachers in this vocational group seemed to suggest that any specialized situation like a special play environment would tend to separate the blind child that much more and interfere with his successful integration. However, an analysis of the data presented in Table V indicated that the evaluations given by this group tended to accept and support the concept of the specialized play environment for blind children to a much greater extent than did the evaluations given by their fellow teachers at a special resident school where separation of the blind child both in education and play was already an accepted practice.

In light of the original hypothesis that required a rating of at least effective, an analysis of the evaluations made by this vocational group of teachers for visually handicapped children at public schools indicated that their ratings much more closely resembled the evaluations made by the group of orientation and mobility specialists than they did the ratings given by either of the other two groups of teachers at resident and nonresident schools. Just as the orientation and mobility group, this group of teachers gave seven of the ten design elements evaluated a rating of effective or better. In addition, in the three cases where the design elements were rated less than effective, this particular group of teachers agreed with the orientation and mobility group on two of three design elements rated less than effective. The only point on which these two groups seriously differed was their evaluation of the embossed map of the play environment. As indicated previously, the orientation and mobility group tended to accept and support the

past research in this area by the fact that 75 percent of the interviewees in this group rated the use of the embossed map in the play environment as effective or better. In contrast to this, 75 percent of the interviewees in the group of teachers for visually handicapped children at public schools rated the use of the embossed map as less than effective.

With regard to the evaluation of the play environment as a complete unit, 100 percent of the group of orientation and mobility specialists rated it effective or better; 50 percent of the teachers for blind children at a special resident school rated it effective or better; 100 percent of the teachers for handicapped children at a special nonresident school rated it effective or better; and 75 percent of the teachers for visually handicapped children at public schools gave it a rating of effective or better. However, the other 25 percent of the interviewees in this last group were undecided about the effectiveness of the play environment as a complete unit even though none of these interviewees had shown any indecision in rating the effectiveness of the ten different design elements that made up the play environment.

Additional comments. An analysis of the additional pertinent data obtained by added comments made by the interviewees developed the following findings.

I. Additional Pertinent Comments relating to the degree of Effectiveness of the Embossed Map of the Play Environment.

As had already been pointed out in the analysis of the data presented in the numerical percentage tables, there was a wide difference in opinions among the different vocational groups

involved in the select sample with regard to the degree of effectiveness of the embossed map. The orientation and mobility specialists (75 percent) and the teachers for handicapped children at a non-resident school (100 percent) rated the use of the embossed map as effective or better, while the teachers for blind children at a resident school (67 percent) and the teachers for visually handicapped children at public schools (75 percent) rated the map as less than effective.

An additional comment made by one of the more experienced members of the orientation and mobility group suggested that the embossed map should be mounted horizontally rather than vertically to make it more effective in improving orientation and mobility skill. In the opinion of this writer, this was an intelligent and valid comment. In a horizontal position not only would the embossed map be more accessible to both the larger and smaller children, but it would also be in a position that would be easier to learn to use in orienting to the actual spaces in the play environment. In the vertical position, the blind child would have to transpose the information he was reading with his fingers from a vertical to a horizontal orientation in order to apply it to the actual horizontal layout of the play environment. However, if the embossed map was mounted in a horizontal position to start with then this transposition of tactile data would not be required, thus making the map that much more effective for the blind child to use.

Another comment made by one of the teachers for blind children at a special resident school suggested that for most blind children

learning to use tactile maps was a very difficult task, and because of this, perhaps their use in this play environment would prove to be too difficult for the younger blind child to master. In the opinion of the writer, this comment had merit. However, as the basic purpose of the play environment was to provide the blind child with challenges and motivations to help improve his effective orientation and mobility, the use of the embossed map as one design element was considered to be justified. It was probably true that the smaller blind children would need help in learning to use this particular element, but because the related literature indicated so strongly that the use of such tactile maps could be very effective in helping to improve the orientation and mobility skills of the blind, the writer felt it should be included in the play environment as a challenge to learn.

II. Additional Pertinent Comments relating to the degree of Effectiveness of the Activity Play Court.

An additional comment made by one of the interviewees who had actually designed play activities for blind children suggested that in the design of some of the galvanized steel pole climbers it might be a good idea to add some texture to the outer-most pipes. Thus the blind child could feel and detect through his fingers when in his climbing activities he was reaching the outside limits of the climber. This would provide him with a warning cue to prevent him from falling off the end. In the opinion of the writer, this was another excellent suggestion. It could be very easily accomplished by merely having the outside pipes knurled and it would add a needed

safety factor to the design element.

Although the investigator in this study had purposely designed this particular design element to provide a play space where the blind child could learn to participate in play by learning to develop his ability to use his sense of touch, several of the interviewees made the comment that the activity play court might be too complex and dangerous for the child to learn to use alone. The writer does not agree with this comment. All of the play items in this activity play court were designed as stationary objects with the idea in mind of providing the blind child with a safe yet challenging play space in which he could learn to play without guidance. To learn to play effectively here, the blind child would first be required to learn to use his sense of touch to move about effectively; thus he would be improving his orientation and mobility skills by participating in play. This play court was another of the challenges to motivate the blind child to develop greater independence. According to Norris (38), although there may be dangers in expecting too much of the blind child, experience has shown that the dangers of expecting too little were even more serious.

III. Additional Pertinent Comments relating to the degree of Effectiveness of the Roll and Tumble Hill Play Court.

As indicated on Table I, page 59, this play court received the highest rating of all of the design elements evaluated. Ninety-two percent of all the interviewees rated it effective or better. Several additional comments were made concerning it, and although it was not stated in so many words, it was the opinion of

this writer that one of the reasons so many interviewees rated it highly was that as a play activity it was simple and unstructured and probably allowed the blind child a greater opportunity to just relax in play. In contrast to some of the other more structured play courts where a learning experience was an important emphasis, here in the roll and tumble hill play court the major concern was more on play than learning.

Another comment made by two of the teachers for blind children at a special resident school suggested that the handrail in this particular play court should be set back to allow more space for safe landings in the sandy pit at the base of the hill. In the opinion of this writer, this was probably a very legitimate comment.

IV. Additional Pertinent Comments relating to the degree of Effectiveness of the Giant Jigsaw Play Court.

In contrast to the last mentioned design element, this giant jigsaw play court received the highest rating of less than effective (39 percent) of any of the other design elements evaluated. In addition, another 9 percent of the interviewees were undecided about its effectiveness.

With regard to additional comments made, this play court was also the most criticized design element in the play environment. A comment made by one of the more experienced interviewees suggested that a somewhat similar type of play activity had been tried before with only partial success. Apparently, in order to design a giant jigsaw court that would really work, it would be necessary to very

carefully design the puzzle parts with the specific age of the blind user in mind. The specific age of the child was important because this would determine how big the puzzle parts could be and still be manipulated by the hands of a child that age. Also, experience had indicated that most blind children had great difficulty in attempting to solve puzzles when the interlocking parts were primarily circular or curvilinear. The angular interlocking parts were much more successfully handled.

Another comment suggested that blind children would be able to use and appreciate this type of picture puzzle much better if it was more three-dimensional in design with three-dimensional parts that the blind child could more effectively relate to by embracing and feeling them. The parts might also be designed to fit into peg-like holes of different conspicuous shapes. It was further suggested that distinctive textures might be added to the various puzzle parts to help in their identification.

Another comment indicated that certainly this type of play court would require much more supervision of play activity in contrast to other design elements like the activity play court where the blind child could be left on his own to learn to participate. Certainly here in the giant jigsaw play court there would have to be someone present, at least at the start, to help the younger children to understand what to do and initially how to do it. In the opinion of this investigator, all of these comments presented valid data to be carefully considered in any final development of this play environment.

V. Additional Pertinent Comments relating to the degree of Effectiveness of the Sensory Obstacle Play Course.

Perhaps no other design element in the play environment more directly related to the information obtained in the review of the related literature in this study than did the sensory obstacle course. The writer especially tried to develop in this design element some of the more important mobility and orientation skills required of the young blind child. Apparently the effort was mostly successful because 79 percent of all the interviewees rated the results as effective or better. However, their additional comments tended to be somewhat less approving than their actual rating.

One comment suggested that the overemphasis on recorded messages would tend to make the blind child too dependent on them and thus defeat the whole idea of developing greater independence. Another comment voiced the opinion that this particular court was not a play court at all but rather a very structured learning experience for developing orientation and mobility skills. One specialized teacher thought the obstacle part of the course would be far too easy for most blind children, while another specialized teacher thought it would be far too difficult and should be simplified to include fewer obstacles. One of the more experienced of the orientation and mobility specialists commented that the obstacle course would make a good teaching area for learning mobility skills but practice would be required. Another comment suggested that such an obstacle course would require supervision because if the blind child made a wrong choice he would be lost with no hope of finding

his way again without assistance. A final comment made by one of the interviewees who was actually partially blind himself stated that the sensory obstacle course was an excellent way to teach orientation and mobility in a play experience.

It is the opinion of this writer that most of these comments had a degree of merit, but some more so than others. The question of whether this play environment was really a play environment at all or merely a series of structured learning experiences seemed to be an important issue for critical appraisal. According to Resnick:

> In many ways, recreation and play provide the ideal environment in which blind children can be motivated and encouraged in at least the beginnings of independent mobility. (70:292)

The author of this study believes that too much emphasis should not be put on the question of whether this play environment is basically play or primarily learning. In the opinion of this writer, play itself is perhaps the most basic learning experience a child can participate in. Play is one of the most primary means through which the child learns about himself, his fellow children, and his surrounding environment. Perhaps for the blind child play and learning are even more closely related than they are for the sighted child, because the blind child can not effectively participate in play until he has learned to move about successfully and independently.

Another comment that required further appraisal was the one which suggested that the recorded messages, as structured learning experiences, tended to encourage an overdependence and thus defeated the whole concept of developing greater independence. One of the

primary intents of the investigator in designing the play environment evaluated in this study was to create learning experiences in play that would hopefully motivate the blind child to acquire additional knowledge and skills which he could take with him out into the everyday world. The play environment was intended to be a means to an end. If a particular structured learning experience in play helped the blind child to begin to learn to differentiate right from left or to follow a specific compass direction, then this was the means to the end. Having acquired this new mobility knowledge, the blind child would then have the ability to apply anywhere in his life. It seemed to this writer that the primary concern should not be a fear of becoming overly dependent on the structure of a specific learning experience, but rather a concern for developing new skills that the blind child would carry with him long after he had left this play environment.

The comment suggesting that additional supervision would be required was a valid one and it was previously discussed in relation to the last design element. The writer agrees that variations in the basic design concepts of the different play courts would require a different degree and extent of supervisory activity. The additional factor of variation in age of the blind child user would also be a concern. Probably the older and more skillful children could learn to use most of the design elements with little or no supervision. However, the younger ones would no doubt require additional assistance and especially so in some of the more complex play and learning activities.

VI. Additional Pertinent Comments relating to the degree of Effectiveness of the Kid Garden Play Court.

As indicated on Table I, page 59, this design element was rated effective or better by approximately two-thirds of all the interviewees while the other one-third rated it as less than effective. In the case of this particular play court there was no indecision on the part of any of the interviewees. Everyone clearly evaluated it as either effective or not effective.

Again, one of the main comments made in reference to this design element involved the matter of supervision required. This play court was probably the most different one in the entire play environment. The investigator purposely included it to provide a wider variety of different types of play activities. The basic learning experiences involved here were the opportunities for the blind child to begin to learn something about plants, soil, and growing things. In addition, he would be required to develop an orientation to the proper use of tools and materials involved in gardening. However, as many of the comments pointed out, in order for such a play activity to be successful proper supervision would be required, and probably the most important factor of all would be the need to instill a feeling of pride and accomplishment in the blind child from participating in this type of activity. This would provide the motivation that would hopefully hold the interests of the child over the period of time that would be involved in the growing of a plant. Some of the comments made by the interviewees suggested that this play court was out of place in relation to the other

design elements in the play environment and in many ways it was not really practical. The author of this study feels that such a play court as this could work if supervised properly, and if successful, it might turn out to be the favorite part of the play environment for some of the blind children who came here.

VII. Additional Pertinent Comments relating to the degree of Effectiveness of the Tactile Kid Town Play Court.

Table I, page 59, indicates that this play court received the second highest rating of all of the design elements evaluated, for 87 percent of all interviewees rated it as effective or better.

One of the most repeated comments made in reference to this design element was that the basic idea was good but that the blind child should not be limited to just the fitting together of building blocks. He should be allowed and encouraged to also learn to use hammers and saws, and to build his own structures out of the same types of building materials that the sighted child used. One of the more experienced of the interviewees stated that he presently was working with a workshop full of blind craftsmen who were expert in the use of all kinds of woodworking tools including the operation of lathes and drills. Many comments were made to the effect that the tactile kid town was a good start for the younger blind child, but that later as he matured he should be given the opportunities to advance to the use of more complex building techniques.

Again, the question of additional supervision was raised with the indication that certainly adequate guidance would be required in the proper use of this type of design element.

VIII. Additional Pertinent Comments relating to the degree of Effectiveness of the Jet Plane Play Court.

This was another one of the design elements that apparently provided the interviewees with a clear-cut choice with no indication of indecision. Seventy percent of the interviewees rated it as effective or better, while 30 percent rated it as less than effective.

Additional comments tended to contradict each other, to some extent, in regard to this design element. On one hand, the comment was made that there should not be just a textured safe area for the blind child to explore, but rather he should be allowed to freely explore the entire size and shape of the jet plane without any restrictions. In contradiction to this, another comment was made that suggested that the design element was too unsafe and that additional sensory warning cues should be provided to alert the exploring blind child that he had reached the end of the fuselage or the tip of the wing. A third comment suggested that the basic idea was good but that it should be expanded to add a greater variety to the types of objects that the blind child must become familiar with. This could be done by periodically changing the object in the court and replacing it with another one of different shape and form. It was recommended that such objects as a fire engine, a motor boat, a locomotive, and even a rocket ship could be periodically rotated as objects to tactually explore and understand.

In the opinion of the investigator, these were very worthwhile comments. The suggestion of periodic rotation was especially good and by merely enlarging the sandy area in the center of the

court to provide additional safe area for jumping and falling, this idea could easily be accomplished. The writer tended to agree with both the suggestion to allow the blind child a greater amount of freedom to explore the objects on his own terms, and also the comment that suggested adding additional sensory cues at critical points as warning devices to alert the exploring blind child that he was approaching an edge area.

IX. Additional Pertinent Comments relating to the degree of Effectiveness of the Artist's Corner Play Court.

An analysis of the evaluations made by all the interviewees indicated that 79 percent rated this design element as effective or better, 17 percent rated it as less than effective, while 4 percent were undecided about its effectiveness. In regard to additional comments made, this particular design element received the fewest comments of all the items evaluated in the play environment. In fact, the only comment made concerning this play court involved the matter of additional supervision required, as already discussed in relation to previous design elements. Perhaps one of the reasons for this lack of additional comments was that this play activity was much more concerned with developing orientation skills than it was with improving specific mobility, and this more limited scope perhaps did not motivate as strong a reaction on the part of the interviewees as did some of the other more complex and involved design elements.

X. Additional Pertinent Comments relating to the degree of Effectiveness of the Skater's Rink Play Court.

Of the ten different design elements evaluated in this play

environment, this play court produced the greatest amount of indecision on the part of the interviewees in making an evaluation. Seventy percent rated it effective or better, 17 percent rated it less than effective, and 13 percent were undecided concerning its effectiveness.

In addition, this design element received more added comments from the interviewees than any of the other play items. Fifty percent of the interviewees made some type of additional comment concerning this particular play court, and of this large number of additional comments a large majority of them were critical of the design element as proposed. In fact, it was somewhat surprising that 70 percent of the interviewees rated this play activity as effective or better in light of the large number of critical additional comments that were made.

Nearly all of the comments stated that the use of the overhead ring to help guide the blind child in skating around the court was completely unnecessary. It was strongly suggested that blind children of this age-group could easily learn to use the court without the need for such a guiding crutch. Many interviewees considered the use of such a ring to be in direct contradiction to developing independence in mobility. Several interviewees felt that the use of the handrail surrounding the court was really not required and should be removed. One of the more experienced members of the select sample thought that the change in texture on the floor of the court to warn the skater that he was approaching the outside railing was not really effective, and it would be better to increase

the diameter of the outside railing to act as a blunt impact wall to bounce the circulating skater back into the center of the court.

One interviewee stated that the use of the overhead ring was not only unnecessary, but also made the use of the court more dangerous to the skaters because it would encourage the blind children to use the court in a more dangerous and risky manner than they would if the ring was not there. Another comment suggested that the outside handrail could be eliminated by banking the floor of the rink at the proper angle to retain the rotating skater within the circular limits of the play court. A comment made by one of the more experienced of the mobility and orientation specialists suggested that perhaps a turnstile bar might be installed at the center of the court for use by smaller blind children just learning to skate. This should be designed in such a manner that it could be removed when the skater's rink was being used by older and more experienced children. A final comment once again suggested that some amount of supervision would be necessary for the proper operation of this design element.

In the opinion of the investigator, many of these comments offered very valid data for use in improving the design of this particular play court. In reviewing both the rating and the additional comments given in regards to this design element, it appeared that the consensus was that the concept of the skater's rink itself was good but that changes in the original design would be required. The reaction of the interviewees to this proposed design element was an excellent example of the benefits derived

from an interdisciplinary approach to the solution of a problem. The orientation and mobility specialist, the teacher, and the designer all had important input to contribute.

XI. Additional Pertinent Comments relating to the degree of Effectiveness of the Play Environment as a Complete Unit.

Table I, page 59, indicates that 78 percent of all interviewees rated the play environment as a complete unit as effective or better, 9 percent rated it as less than effective, and 13 percent were undecided about its effectiveness. This 13 percent was the largest percent of indecision involved in the evaluations made, and it was only equaled by the 13 percent indecision involved in the evaluation of the skater's rink play court.

In the additional comments there were some excellent suggestions offered. One orientation and mobility specialist stated that although he considered the play environment to be an excellent concept, he had difficulty in making the evaluations based on effectiveness to improve orientation and mobility skills because of the very wide range of abilities that existed among blind children. Some would find it very, very difficult to use, while others would find it very, very easy to master. The suggestion here was that perhaps the use of varying levels of supervision would be the answer to making the play environment more usable for everyone. Most comments seemed to suggest that the majority of blind children in this age-group could not be expected to learn to use the play environment alone by merely finding and following the sensory cues provided. There would have to be an initial orientation made by a sighted

person to make the younger blind children aware of some of the basic play activities available here. After this initial orientation, then it could be assumed that the more capable blind children would take the initiative to learn to use the various sensory cues provided.

There were certain groups of comments which suggested that the play environment was far too structured in its design, that there were far too many handrails involved, and that the approach should have been more flexible allowing the blind child more freedom to explore on his own initiative. These comments tended to see possibilities in the play environment but only after modifications had been made. It is the opinion of the investigator that these comments were made by those of the select sample who saw the play environment as one primarily for play and who tended to reject the concept of combining play with learning. The structured, inflexible approach they referred to was the learning part of the play. If the intent of the design had been to merely create a fun and play environment then the investigator's entire approach would have been very different, but such was not the intent of this design. The basic intent of this play environment was based on the belief that blind children could not play effectively until they had learned to move about effectively. The play environment was specifically designed to help them accomplish the two together.

Some of the comments suggested that the play environment was too protective in its approach and because of this it tended to defeat its purpose to develop independence. One interviewee stated that the whole idea of developing mobility skill in the blind

child was motivating him to take a chance. Another indicated a more extreme view in suggesting that any special design for the blind was a mistake. They should be allowed and required to participate under the same circumstances as the sighted because this would be the way they would have to compete in the real world. In the opinion of this writer, this point of view tended to contradict much of the information developed from the survey of related literature in this study.

Dattner wrote:

> Children with special problems need specially designed playgrounds . . . .
>
> . . . .
>
> The environment in which they play must respond to that part of them which is healthy and capable, with help, of growth and development. (25:109)

Lowenfeld (34) stated that experience had shown that the I.Q. of blind children could be increased by as much as twenty points by merely transferring them from an understimulated environment to one in which they were provided with challenging opportunities to use their remaining senses to learn.

Cratty (54) suggested in reference to programs of learning for blind children that early, thorough, and systematic tactile training using all types of sensory cues should be accomplished. Such programs for learning orientation and mobility skills should start as early in life as possible.

Lord (32) stated that the blind had no special compensating skill in using sensory cues to help them move about. Any ability that they were to acquire in using such nonvisual cues to improve

the effectiveness of their orientation and mobility must be learned by instruction, concentration, and practice.

The play environment designed for this study was based on the research and writings of such men as Dattner, Lowenfeld, Cratty, and Lord. It is a play environment specifically created on the principles advocated by these aforementioned authorities.

One group of comments indicated such a strong objection to any kind of separation of the blind child from his sighted peer that the basic concept of any type of special play environment for blind children tended to be immediately rejected. It is the opinion of this writer, as a result of the survey, that most of the 13 percent of interviewees who were undecided about the effectiveness of the play environment as a complete unit were the same interviewees who were against any type of separation. They were able to evaluate the individual design items inside the play environment without indecision, but when it came to evaluating the complete unit, then the questions concerning specific location and separation came into the picture and indecision was the result. Several of the comments made by this particular group suggested that the play environment should be located in such a manner that would allow it to be used by both blind and sighted children togehter.

Other added comments stated that the idea of using very bright colors was a good one because those blind children with some degree of remaining vision would only be able to detect such very bright colors. One interviewee commented that the use of the tactile walkway was an excellent idea.

One very important comment suggested that although the play environment as it was designed would be effective, its scope could be greatly increased by expanding the group of potential users. This particular interviewee indicated that today there were many more children in the blind and retarded group then in the blind-only category. Because of this, he proposed that the play environment would have a much greater chance for actually becoming a reality if it was modified in a few minor ways to include this additional group of handicapped children.

A final comment made by the one member of the select sample who was partially blind himself stated that in his opinion the results of the study should definitely be published so that they would be available in the future to other researchers in this area.

The Interpretation of the Findings

According to Clarke (20), not only was the researcher required to report the important aspects of the findings of the study, but in addition it was his responsibility to interpret those findings based on his evaluations of the analysis of the data. In light of this requirement, this researcher developed the following interpretations for the benefit of future designers for blind children.

It is the opinion of this researcher, based on the findings presented in this study, that any future designer who attempts to develop an environment for the purpose of motivating blind children to learn more effective mobility and orientation in their play, should be aware of the following information.

I. In contradiction to the results of research performed

in this field, future designers for the blind should be aware of the fact that a large number of the professional people surveyed in this study who worked with blind children tended to reject or to be undecided about the effectiveness of the use of embossed, tactile maps, as they were utilized in the proposed play environment, to help blind children to improve their orientation and mobility skills. In this particular study, this large number amounted to 39 percent of the sample surveyed.

II. Among these professional people working with blind children who were surveyed, there tended to be a considerable amount of both agreement and disagreement concerning the effectiveness of different design elements to help the blind child to improve his orientation and mobility. However, the designer should appreciate the fact that these practicing professionals would have very valuable and important input to contribute in any design for blind children.

III. Within the group of professional people surveyed, there tended to be one point of view proposed that rejected the idea of any type of special environment that suggested a separation of blind children from sighted children. This point of view seemed to be based more on emotion than on reason in that it saw the integration of blind and sighted children as a type of magic process that through acceptance, love, and understanding would tend to dismiss the reality of blindness. Unfortunately, information presented in the review of the related literature seemed to strongly imply that this magic integrative process was more of a wish than a fact. However, any future designer for blind children should be aware that this point

of view existed among some of the most competent professionals in the select sample surveyed.

IV. Another strong point of view proposed by some of the professional people surveyed was an objection to combining learning with play. These people tended to see play as a free, unrestricted, fun-type activity that should not be manipulated or structured for the purposes of creating learning experiences of any type. Unfortunately for the young blind child, play as a free, unrestricted, fun-type activity has no meaning until he has the ability to move about effectively. However, again the future designer for blind children should be aware that such a point of view existed among practicing professionals in the select sample and some of them felt very strongly about it.

V. Of primary concern to any future designer for blind children should be a consideration of supervision required. It would be neither logical nor practical to attempt to design without first giving this very basic factor a careful consideration. In the evaluation conducted in this study, this particular point was the one most often raised by the members of the select sample surveyed. In several cases, the effectiveness of different design elements was dependent upon the amount of supervision that would be present With proper supervision, some of these design elements could be effective and without it they would not be.

VI. One of the more important aspects of the findings was the suggestion made by some in the select sample that the scope of the play environment be increased to include both the blind and

the blind-retarded. In the opinion of some of the more experienced members in the group of professionals surveyed, such an increase in scope would greatly increase the possibilities for actually building and using such a play environment because the number of potential users in the blind-retarded group was much larger. Such a change in scope would also necessitate some degree of modification in the basic design approach. However, it would be to the advantage of any future designer for blind children to carefully consider this additional suggestion.

Chapter V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Clarke stated:

> The final chapter should give an overview of the study. Briefly, the purpose of the study, the methods employed, and the results should be summarized, and the conclusions should be stated and supported. (20:438)

In consideration of this statement, this final chapter of the study was organized under the following sections:

I. Summary
  A. The Purpose of the Study
  B. The Research Method and Procedures
  C. The Results of the Study
    1. A comparison of results with other studies
    2. Unique contributions of the study
II. Conclusions
  A. The Accomplishment of the Purpose of the Study
  B. The Testing of the Hypothesis
  C. The Interpretation of the Testing Results
III. Recommendations
  A. Implications of the Study
  B. Recommendations for Further Study

SUMMARY

The Purpose of the Study

This study was an evaluation of a play environment for blind children using the philosophical method of research in which the judgements of qualified people were used for the purpose of gathering data.

The Research Method and Procedures

The research method used was the philosophical method in which clear-cut criteria were developed for evaluation by a select sample of qualified people. The elements evaluated were the various design elements that made up a play environment for blind children. The evaluations made were how effective the various design elements were in helping the blind child to develop through his play activity a greater degree of orientation and mobility skill. The select sample of qualified people was made up of those people who had actual professional experience in training and educating blind children.

A survey was conducted in the form of a schedule of personal interviews with each member of the select sample. At each interview a prepared questionnaire was presented to each interviewee and then a recorded, slide presentation of the proposed play environment for blind children was shown. At specific points in the recorded narration, the interviewee was asked to make an evaluation of the effectiveness of various design elements in the play environment in helping the blind child to develop in that particular play activity a greater degree of orientation and/or mobility skill. The evaluation was made by selecting one of five possible choices on a rating scale provided in the prepared questionnaire.

The basic tools that were constructed for the purpose of

gathering data were the proposed play environment for blind children as a recorded, slide presentation and the prepared questionnaire for use with the select sample surveyed.

The Results of the Study

The results of the study were analysed and presented in two basic forms:

I. The evaluations in degree of effectiveness according to five possible choices on the rating scale were compiled and summarized in the form of five numerical percentage tables that provided the means for making an analysis by comparison between the similarities and differences of evaluations made by the four different vocational groups represented in the select sample surveyed. Table VI, page 99 summarizes the results of this analysis by comparison made in the five numerical percentage tables. Table VI indicates that the orientation and mobility specialists rated seven of the ten design elements as effective or better, and 100 percent of this group rated the play environment as a complete unit as effective or better. Teachers for blind children at a resident school rated only five of the ten design elements as effective or better, and only 50 percent of this group rated the play environment as a complete unit as effective or better. Teachers for handicapped children at a non-resident school gave the highest evaluations by rating all ten of the design elements as effective or better, and 100 percent of this group rated the play environment as a complete unit as effective or better. The final vocational group, the teachers for visually handicapped children at public schools, rated seven of the ten

TABLE VI

A SUMMARY OF COMPARISONS OF EVALUATIONS MADE BY THE FOUR VOCATIONAL GROUPS

Design Element Evaluated	Orientation & Mobility Specialists	Teachers for Blind (Resident School)	Teachers for Handicapped (Non-Resident School)	Teachers for Visually Handicapped (Public Schools)
1. Embossed Map	Effective or Better (75%)	Less than Effective (50%)	Effective or Better (100%)	Less than Effective (75%)
2. Activity Court	Effective or Better (75%)	Less than Effective (50%)	Effective or Better (100%)	Effective or Better (100%)
3. Roll and Tumble Hill	Effective or Better (100%)	Effective or Better (67%)	Effective or Better (100%)	Effective or Better (100%)
4. Giant Jigsaw	Less than Effective (50%)	Less than Effective (50%)	Effective or Better (100%)	Less than Effective (75%)
5. Sensory Obstacle Course	Effective or Better (75%)	Effective or Better (67%)	Effective or Better (100%)	Effective or Better (75%)
6. Kid Garden	Less than Effective (50%)	Less than Effective (67%)	Effective or Better (100%)	Less than Effective (50%)
7. Tactile Kid Town	Effective or Better (100%)	Effective or Better (67%)	Effective or Better (100%)	Effective or Better (75%)
8. Jet Plane	Less than Effective (50%)	Effective or Better (67%)	Effective or Better (75%)	Effective or Better (75%)
9. Artist's Corner	Effective or Better (75%)	Effective or Better (67%)	Effective or Better (100%)	Effective or Better (100%)
10. Skater's Rink	Effective or Better (75%)	Effective or Better (50%)	Effective or Better (100%)	Effective or Better (75%)
11. Play Environment	Effective or Better (100%)	Effective or Better (50%)	Effective or Better (100%)	Effective or Better (75%)

design elements as effective or better, and 75 percent of this group rated the play environment as a complete unit as effective or better.

II. A summary of all pertinent additional comments made by the interviewees was presented and analysed to develop any additional findings that might contribute to the results of the study. In some cases the additional comments tended to support the ratings given and in other cases the comments tended to contradict the ratings. In summary, several additional and significant items of information were obtained to broaden the scope of the results of the study. The following were some of the more important of these additional findings:

A. From the viewpoint of safety and more effective use, several additional comments were obtained in the survey to improve the physical design of various parts of the proposed play environment. Often, these additional comments were of the type that could only be made by a professional person with experience in actually working with blind children. Their input obtained by this evaluation represented, in the opinion of this investigator, an excellent example of the benefits to be derived from an interdisciplinary approach to the solution of a problem.

B. Several additional comments emphasized the critical importance of supervision required for the effective use of some of the design elements involved in the play environment. The very important point was made that a proper consideration of the amount of supervision required should be a basic consideration of the designer in any design for blind children.

C. Some of the additional comments tended to emphasize the contradiction indicated in Table VI in regard to the use of the embossed, tactile map. In opposition to the findings of several important research studies completed in this area, two of the four vocational groups did not support the use of such maps as they were used in this proposed play environment. Fifty percent of the teachers for blind children at a special resident school rated the use of such embossed, tactile maps as less than effective, and 75 percent of the teachers for visually handicapped children at public schools also rated them as less than effective.

D. Some of the additional comments suggested a strong opposition to combining play with any type of a formal learning experience, even though the results might be an increased development of orientation and mobility skills. These particular interviewees tended to see play as a free, fun-type activity that should not be restricted for any reason.

E. Some of the additional comments registered a sound rejection of any type of special design such as a play environment for blind children. This portion of the select sample thought that any type of special design would tend to create an unreal situation that would overprotect the blind child and in the long run decrease his chances for successful integration with his sighted counterpart in the real-life world.

F. Several of the more experienced members of the select sample made the additional comment that the scope of the play environment should be increased to include the blind multiple handicapped, and

especially the blind-retarded, because this additional group was in much larger numbers as compared to the blind-only group. Increasing the scope to include this additional group would not only make the play environment much more valuable as a combined play and learning situation, but it would also in the opinion of these interviewees greatly increase the possibility of it actually becoming a reality.

A comparison of results with other studies. Although, to this writer's knowledge, there had been no previous studies that had attempted to propose and evaluate the effectiveness of a play environment for blind children, still some of the results obtained in this study tended to indicate an important relationship to the findings of other studies surveyed.

One of the strongest comparisons involved the evaluation of the effectiveness of the use of the embossed, tactile map in the proposed play environment. In contrast to the findings of Berla (49), Bentzen (48), Johnson and Chang (59), and Kidwell (61), all of whom indicated a strong support for the use of embossed, tactile maps in helping the blind to improve their orientation and mobility skills, two of the four vocational groups represented in the select sample of people qualified in training and educating blind children rated the use of such maps in this proposed play environment as less than effective. Fifty percent of the teachers for blind children at a special resident school rated the use of the embossed, tactile maps as less than effective, and 75 percent of the teachers for visually handicapped children at public schools also rated them as less than effective.

Another related comparison involved the findings of Steinzor (72) who indicated, based on actual experience with blind children, that those blind subjects investigated tended to express a preference for playing with other blind children like themselves rather than with sighted children. Steinzor proposed that the reason for this preference was based on the need for all children to succeed independently in play. The chances for a blind child to succeed independently in play when competing with sighted children were greatly reduced. This finding tended to contradict the additional comments made by several of the interviewees involved in the select sample in this study who tended to reject the concept of the special play environment proposed based on the reasoning that it deprived the blind child of a needed opportunity to integrate with sighted children in play.

Unique contributions of the study. In the opinion of the writer of this study, this thesis made a unique contribution to research in that it was the first attempt to conduct an evaluation of a proposed play environment for blind children using valid research procedures. In addition, the study represented an excellent example of the use of the interdisciplinary approach to solving a problem in which the people most qualified to contribute to the solution of the problem were the ones whose evaluations were sought and analysed.

CONCLUSIONS

The Accomplishment of the Purpose of the Study

The purpose of the study was to conduct an evaluation of a play environment for blind children for the purpose of gathering

data to test a specific hypothesis. As the completed study indicates, this purpose was fully accomplished.

The Testing of the Hypothesis

The hypothesis stated that a majority of a sample of people qualified in training and educating blind children would agree that the play environment designed for this study would be rated at least effective on the rating scale in helping blind children to develop through their play activity a greater degree of mobility and orientation capability. As indicated on Table I, page 59, an analysis of the evaluations made by all interviewees showed that not only did a majority of the interviewees rate the ten individual design elements as effective or better, but in addition, 78 percent of all interviewees also rated the play environment as a complete unit as effective or better. In light of this evidence, the hypothesis was supported by the data.

The Interpretation of the Testing Results

In the opinion of this investigator, the testing results clearly indicated that a large majority of the select sample of people qualified in training and educating blind children agreed with the concept of developing a play environment in which play and learning were combined to provide opportunities to learn more effective mobility and orientation skills. However, the additional comments made by some of this large majority tended to indicate a wide difference in opinion as to just how this play environment should best be designed, supervised, and located.

Some of the interviewees suggested ways to improve the physical design to make it safer and more effective. Some indicated

that only with adequate supervision could parts of the proposed play environment be successful. Part of the sample opposed the use of the embossed, tactile map as one of the design elements in the play area. A minority of the sample members rejected any type of special design for blind children and several thought that combining play and learning was a mistake. Some of the more experienced interviewees suggested increasing the scope of the play environment to include the blind multiple handicapped and especially the blind-retarded.

RECOMMENDATIONS

Implications of the Study

In order to obtain a more accurate perspective of the implications of this study, it will be necessary to first recognize the limitations of the endeavor. One such limitation was the philosophical method of research used. Another was the limited number of people available to use as a select sample of professionals qualified in training and educating blind children. Another limitation was the meagre amount of previous research done in the primary area of concern. A final but very important limitation was that this study represented the findings of just one evaluation.

In consideration of these limitations, it was the opinion of this investigator that the study and its findings will have the following implications for any future designer for blind children:

I. A large number (39 percent) of the select sample of people qualified in training and educating blind children who were surveyed in this study tended to be in opposition to or undecided about the

use of embossed, tactile maps, as they were used in this proposed play environment, in helping the blind child to improve his orientation and mobility skills.

II. Among these professional people surveyed, there tended to be a considerable amount of both agreement and disagreement concerning the effectiveness of different design elements to help the blind child to improve his orientation and mobility skills. However, the future designer should appreciate the fact that these practicing professionals will have valuable and significant input to contribute in any design for blind children.

III. Within this group of professional people surveyed, there tended to be one point of view proposed that rejected the idea of any type of special environment that suggested a separation of blind children from sighted children. This point of view seemed to be based more on emotion than on reason in that it saw the integration of blind and sighted children as a type of magic process that through acceptance, love, and understanding would tend to dismiss the reality of blindness. As unrealistic as this point of view may seem, any future designer for blind children should be aware that, according to the results of this study, such a point of view existed among some of the most competent members of the select sample surveyed.

IV. Another point of view proposed in the survey of this sample of professionals was the rejection of any concept that tended to combine learning with play. This point of view saw play as a free, unrestricted, fun-type activity that should not be manipulated or structured for any type of learning experience. The future designer

for blind children should be aware that according to this study, such a point of view existed among practicing professionals in the field and some of them felt very strong about it.

V. Of primary concern to any future designer for blind children should be a consideration of supervision required. It would be neither logical nor practical to attempt to design without first giving this very basic factor careful consideration. In the evaluation conducted in this study, this particular point of view was the one most often raised by the members of the select sample surveyed. Often, the amount of supervision present was the deciding factor as to whether a particular design element was rated effective or not effective.

VI. Any future designer for blind children should also be aware of the very important comment made by some of the more experienced members of the select sample that suggested increasing the scope of the play environment to include not just the blind but also the blind multiple handicapped and especially the blind-retarded. In the opinion of some of the interviewees surveyed, such an increase in scope would not only greatly increase the possibility of financing the building of such a play environment but it would also greatly increase the number of possible users.

The author earnestly hopes that this study and its implications will serve to motivate and direct those who may be concerned and interested in future designing for blind children.

Recommendations for Further Study

In the opinion of the investigator of this study, based on the gathering and analysis of data involved, there will be a need

for further research in the areas indicated below:

I. The play environment evaluated in this study should be modified and adapted according to the best information obtained from the survey of the select sample. This modified play environment should then be located and built at a site that will allow it to be used as the basis for an experimental research project using blind children as subjects. The purpose of this experimental investigation would be to actually discover through a controlled group situation to what specific extent would orientation and mobility skills be affected by participation in and use of the individual design elements involved.

II. After the modified play environment had been located and built at a proper site, additional experiments should be conducted to investigate the effects of mixing blind and sighted children in play. The purpose of this study would be to discover what preferences and attitudes might exist between blind and sighted children when mixed in play. Such a study should also give some indication of the comparative merits of separated and integrated play as they affect the young blind child. The results of a study of this type should also provide any future designer for blind children with something more tangible than personal opinion upon which to base design needs.

III. There will also be a need for an additional study to evaluate the use of embossed, tactile maps in helping blind children to improve their orientation and mobility skills. Such a study should cover a larger sample of professional people working with blind children and it should also cover a wider geographical area than covered by this present study. The purpose of such a study would be to discover

if the large number of negative reactions obtained in regard to the use of such embossed maps is typical throughout the profession in general, or was it more of a rejection of their specific use in this particular proposed play environment. If such a study indicated that a large number of the professional people working with blind children do reject the use of such maps, then additional studies should be made to investigate the specific reasons for this contradiction between the researchers and the practitioners in the field.

IV. If experimental research data strongly indicated that developing learning experiences in a play environment will significantly help the young blind child to improve his orientation and/or mobility capabilities, then future designers might develop studies of a broader scope to discover if the use of such designed learning experiences could be applied to benefit other groups of handicapped children in similar play situations.

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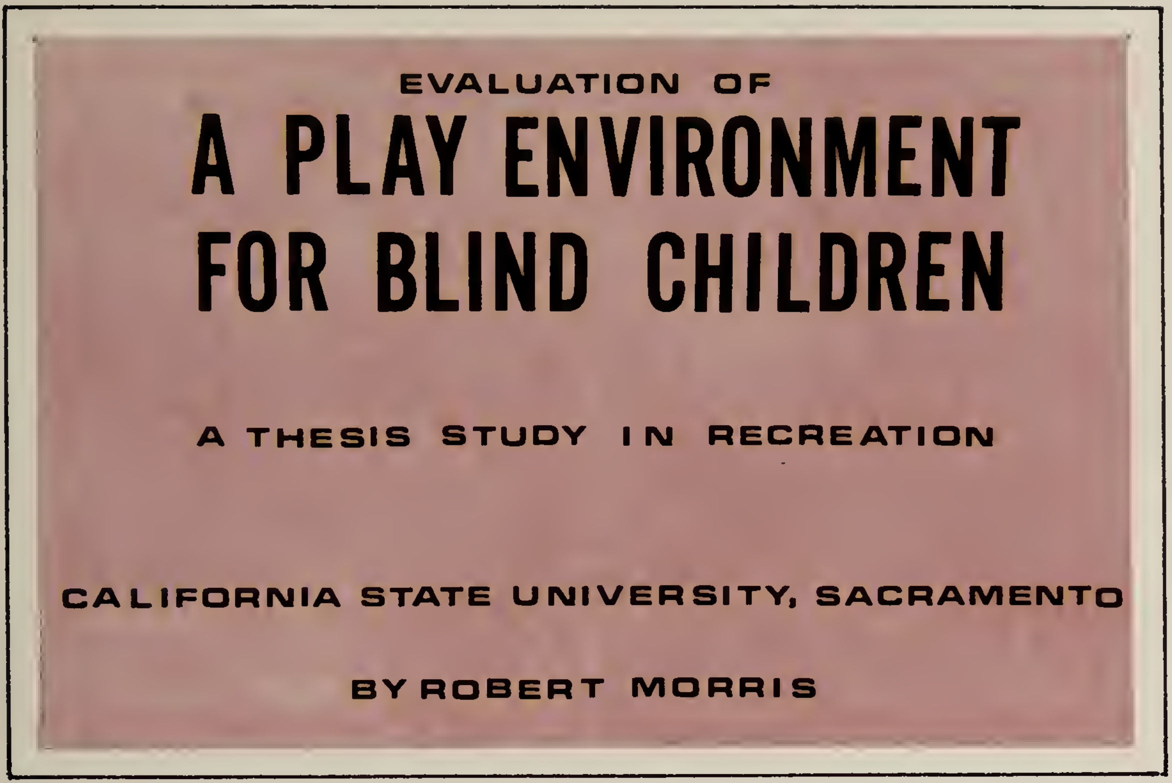
APPENDIXES

Print of Slide (Number 1) Title Slide



EVALUATION OF

A PLAY ENVIRONMENT
FOR BLIND CHILDREN

A THESIS STUDY IN RECREATION

CALIFORNIA STATE UNIVERSITY, SACRAMENTO

BY ROBERT MORRIS

NARRATION

This will be an evaluation to be made by you of a play environment for blind children. This recorded, slide presentation has been developed as a research tool for the purpose of gathering data to test a specific hypothesis. This hypothesis states that a majority of a select sample of people highly qualified in training and educating blind children will agree that the play environment designed for this study will be rated at least effective on the rating scale in helping blind children to develop through their play activity a greater degree of mobility and orientation skill.

NARRATION

You have been given a two page questionnaire form to use in making your evaluations of this study. Please write your name in the upper left-hand corner of page one in the space provided under interviewee.

You will note that the questionnaire provides such basic information as the purpose of the study, the need for the study, instructions for completing the questionnaire, a blank space for you to check in making each of your evaluations, and a space for you to use in adding any additional comments you might wish to make.

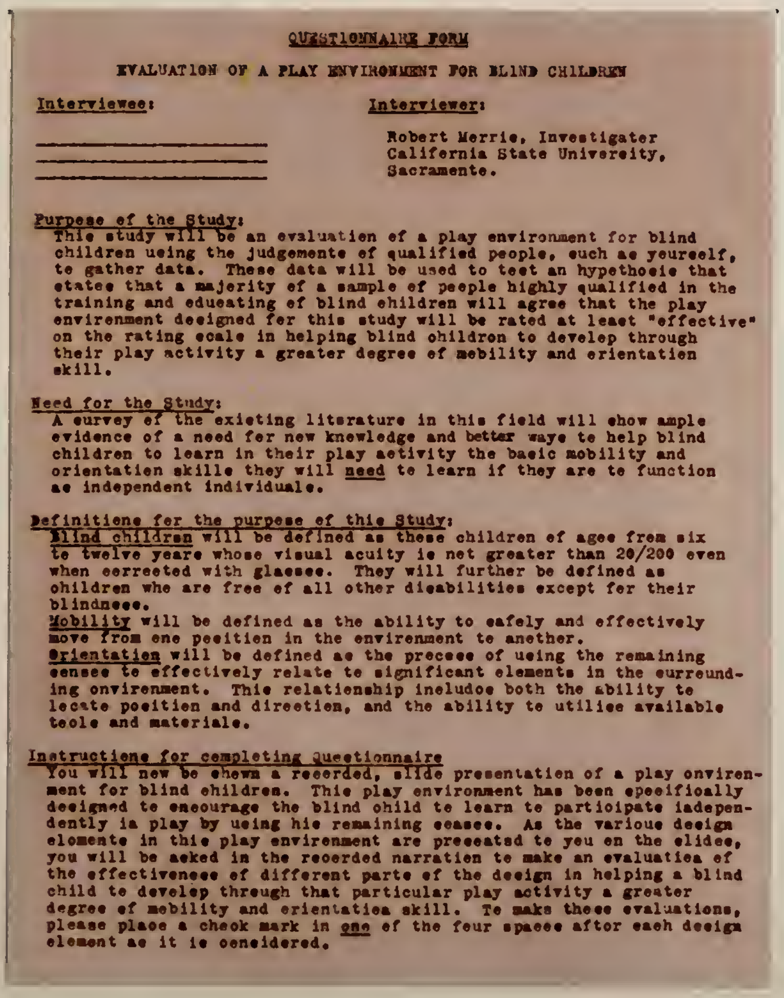
Note also that there are three important words that need to be defined in order for you to make valid evaluations.

Blind children for the purpose of this study will be defined as children of ages from six to twelve years whose visual acuity is not greater than 20/200 even when corrected with glasses. They will further be defined as children who are free of all other disabilities except for their blindness.

Mobility will be defined simply as the ability to safely and effectively move from one position in the environment to another.

Orientation will be defined as the process of using all of the remaining senses to effectively relate to significant elements in the surrounding environment. It is important here, and again later on as this presentation develops, to note that this relationship includes both the skill to locate position and direction, and to the ability to effectively utilize available tools and materials.

Print of Slide (Number 2) Questionnaire Form (Sheet One)



QUESTIONNAIRE FORM

EVALUATION OF A PLAY ENVIRONMENT FOR BLIND CHILDREN

Interviewee:

____
____
____

Interviewer:

Robert Morris, Investigator
California State University,
Sacramento.

Purpose of the Study:

This study will be an evaluation of a play environment for blind children using the judgements of qualified people, such as yourself, to gather data. These data will be used to test an hypothesis that states that a majority of a sample of people highly qualified in the training and educating of blind children will agree that the play environment designed for this study will be rated at least "effective" on the rating scale in helping blind children to develop through their play activity a greater degree of mobility and orientation skill.

Need for the Study:

A survey of the existing literature in this field will show ample evidence of a need for new knowledge and better ways to help blind children to learn in their play activity the basic mobility and orientation skills they will need to learn if they are to function as independent individuals.

Definitions for the purpose of this Study:

Blind children will be defined as those children of ages from six to twelve years whose visual acuity is not greater than 20/200 even when corrected with glasses. They will further be defined as children who are free of all other disabilities except for their blindness.

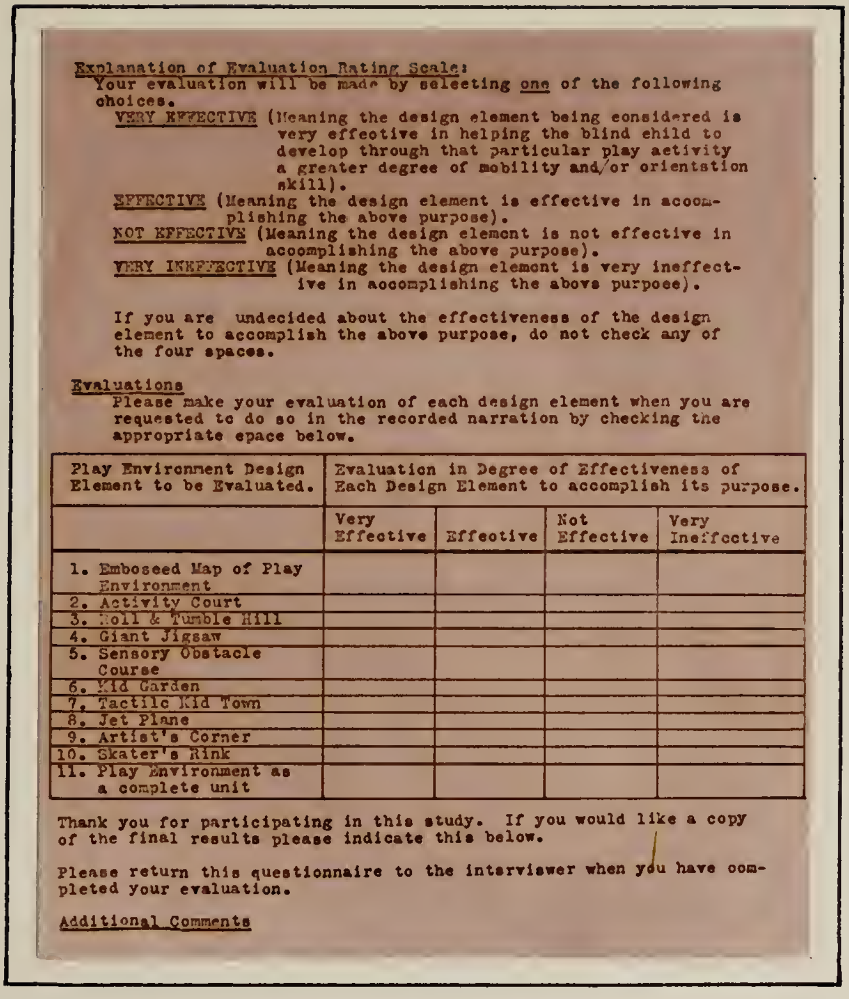
Mobility will be defined as the ability to safely and effectively move from one position in the environment to another.

Orientation will be defined as the process of using the remaining senses to effectively relate to significant elements in the surrounding environment. This relationship includes both the ability to locate position and direction, and the ability to utilize available tools and materials.

Instructions for completing Questionnaire

You will now be shown a recorded, slide presentation of a play environment for blind children. This play environment has been specifically designed to encourage the blind child to learn to participate independently in play by using his remaining senses. As the various design elements in this play environment are presented to you on the slides, you will be asked in the recorded narration to make an evaluation of the effectiveness of different parts of the design in helping a blind child to develop through that particular play activity a greater degree of mobility and orientation skill. To make these evaluations, please place a check mark in one of the four spaces after each design element as it is considered.

Print of Slide (Number 3) Qeustionnaire Form
(Sheet Two)



Explanation of Evaluation Rating Scale:
Your evaluation will be made by selecting one of the following choices.

VERY EFFECTIVE (Meaning the design element being considered is very effective in helping the blind child to develop through that particular play activity a greater degree of mobility and/or orientation skill).

EFFECTIVE (Meaning the design element is effective in accomplishing the above purpose).

NOT EFFECTIVE (Meaning the design element is not effective in accomplishing the above purpose).

VERY INEFFECTIVE (Meaning the design element is very ineffective in accomplishing the above purpose).

If you are undecided about the effectiveness of the design element to accomplish the above purpose, do not check any of the four spaces.

Evaluations
Please make your evaluation of each design element when you are requested to do so in the recorded narration by checking the appropriate space below.

Play Environment Design Element to be Evaluated.	Evaluation in Degree of Effectiveness of Each Design Element to accomplish its purpose.			
	Very Effective	Effective	Not Effective	Very Ineffective
1. Embossed Map of Play Environment				
2. Activity Court				
3. Roll & Tumble Hill				
4. Giant Jigsaw				
5. Sensory Obstacle Course				
6. Kid Garden				
7. Tactile Kid Town				
8. Jet Plane				
9. Artist's Corner				
10. Skater's Rink				
11. Play Environment as a complete unit				

Thank you for participating in this study. If you would like a copy of the final results please indicate this below.

Please return this questionnaire to the interviewer when you have completed your evaluation.

Additional Comments

NARRATION

As this play environment is presented, you will be asked at specific points to make an evaluation of the effectiveness of different design elements in helping the blind child to develop through that particular play activity a greater degree of mobility and/or orientation skill. To make this evaluation you will check one of the following four choices on the rating scale: very effective, effective, not effective, or very ineffective in reference to the effectiveness of that particular design element being considered in helping the blind child to develop this greater degree of mobility and/or orientation capability.

When you are asked in the recording to make an evaluation, please check one of the four spaces after each design element, as shown on the slide and on page two of your questionnaire form.

If you are undecided about the effectiveness of any of the design elements to accomplish its purpose, do not check any of the four spaces.

In some cases you will be asked to evaluate a particular design element for its effectiveness in developing both mobility and orientation skill. In other cases you will be asked to evaluate a particular design element for its effectiveness in developing orientation skill alone, as it has been defined in this study.

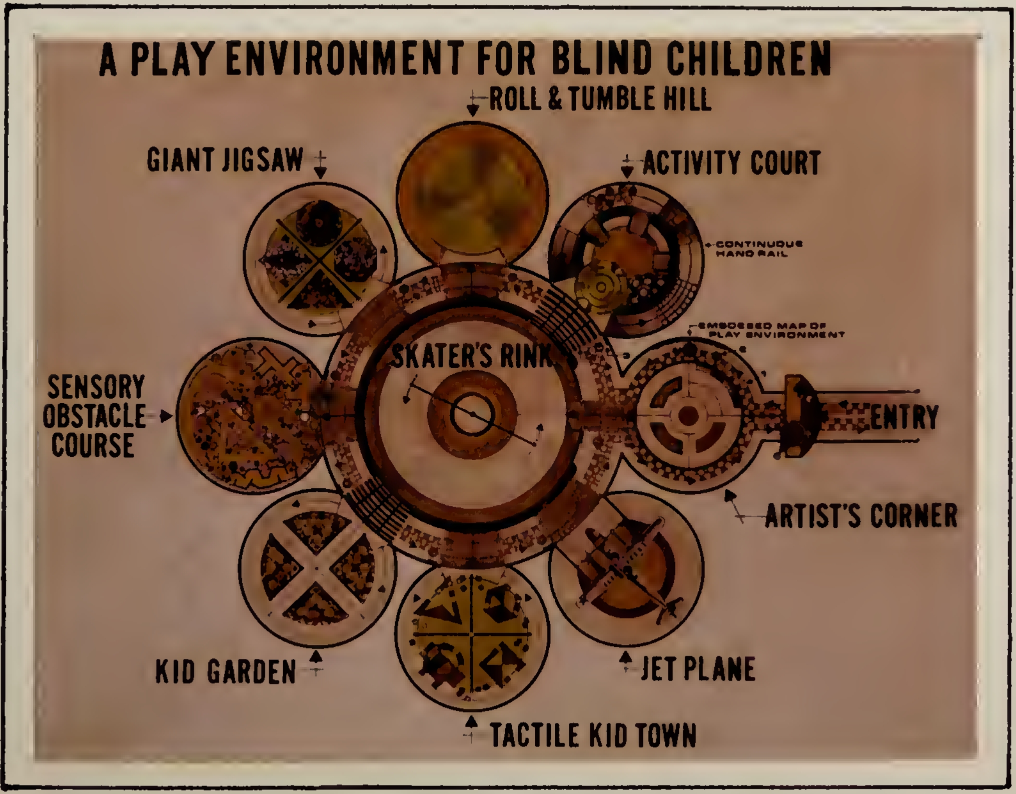
NARRATION

This is a plan view of the play environment to be evaluated. You will note that it is made up of an entry on the right side with eight circular play courts grouped around a larger circular play court in the center. The dark line encircling the entire play environment and each of the individual play courts is a continuous handrail to guide the blind child both in circulating around the play environment, and in participating in each of the many play activities available here. You will also note now, and again later on when we begin to move through the various play courts that make up this play environment, that in contrast to the conventional playground, here all of the play items are fixed in place and it is the blind child who must learn to effectively move about and to orient properly to participate successfully in these various play activities. In fact, the entire play environment as you will see has been specifically designed to encourage and to challenge the blind child to learn to use all of his remaining senses to learn to play like any sighted child.

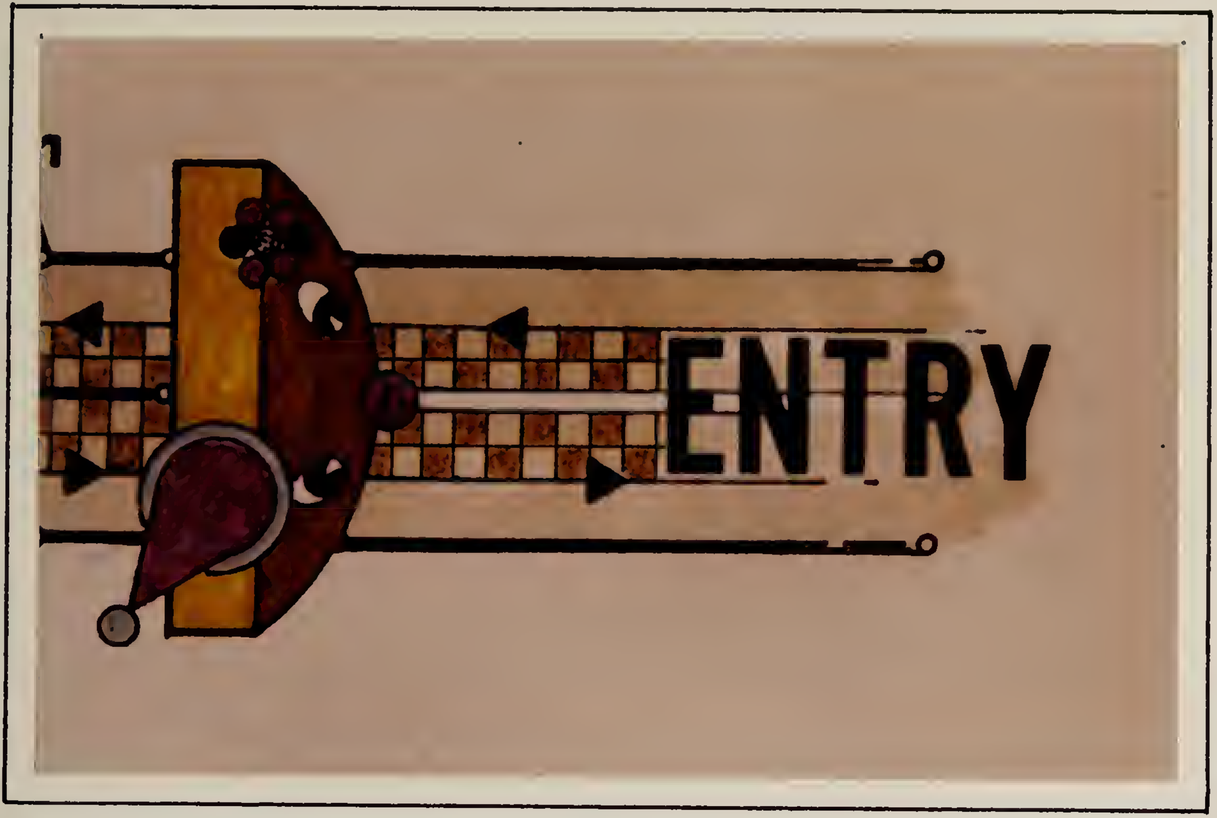
To play effectively, a blind child must also move about effectively and to orient properly to significant elements in his surroundings. This is the basic concept of this play environment.

According to Rose Resnick, a blind person who has spent most of her life helping other blind people to learn to function more effectively, play provides the ideal environment in which blind children can be motivated and encouraged to begin to develop those premobility skills that they must learn to become independent individuals.

Print of Slide (Number 4) Overall Layout of Play Environment



Print of Slide (Number 5) Plan View of Entry



NARRATION

Pretend for a few moments that you are a blind child and you are coming to this new play environment for the first time. Remember, according to Bernardo and others, that nearly 90% of the total stimulation a sighted person receives from his environment comes to him through his eyes. This means that to function effectively, you as a blind child must learn to develop every possible sensory skill at your command if you are to compensate to the maximum possible extent for this tremendous disadvantage.

You will enter your new play environment through a clown's head entry.

NARRATION

To the child on the ground it would look something like this. The small numbered arrows point out important elements that you, as a blind child, should be aware of.

Arrow Number One indicates the continuous handrail to guide the child in entering and leaving the play environment.

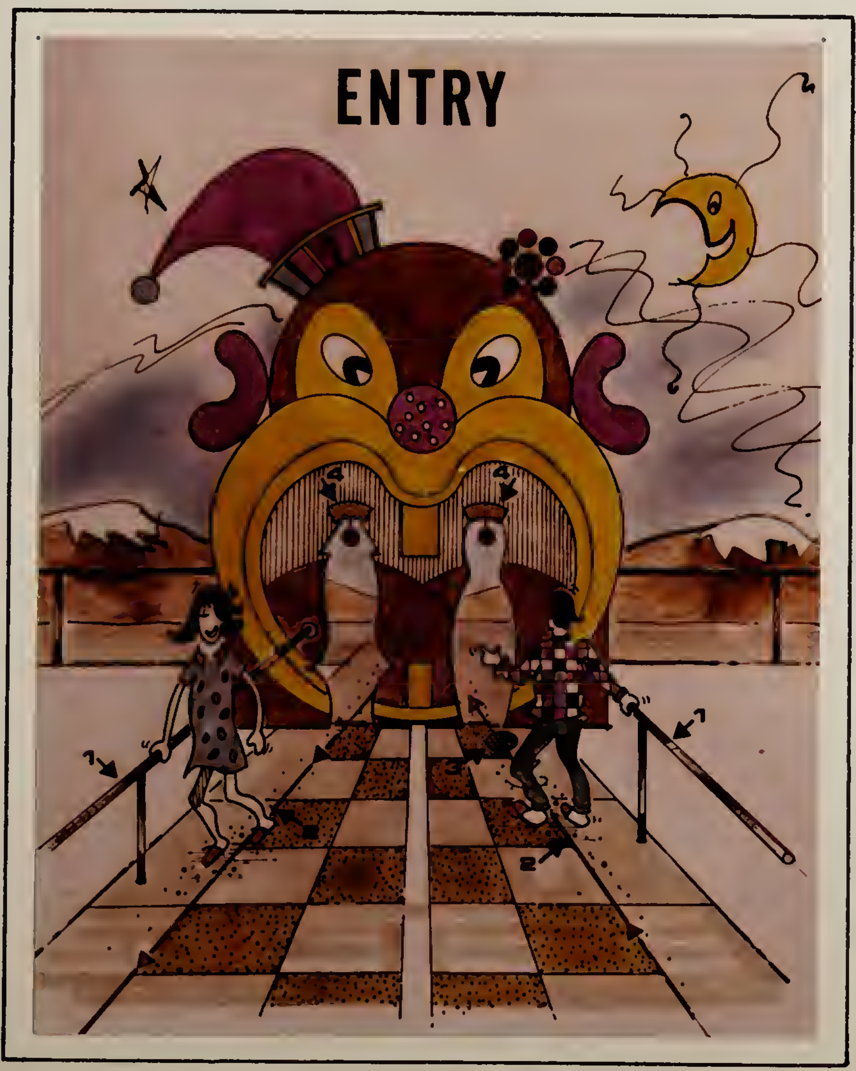
Arrow Number Two points out an important sensory cue that the blind child can use to improve his mobility skill. It indicates the guideline formed by a meeting of two contrasting textures on the walkway where a textured brick surface meets a smoother concrete surface. With practice, a blind child can learn to feel such a change in texture through the soles of his shoes and to use it as a guideline to determine both position and direction. Such writers as Bayes and Francklin have stressed the importance of such sensory cues in helping the blind child to move about more effectively, not only in a play environment, but also in an actual street scene where he may be surrounded on all sides by unseen dangers.

Arrow Number Three indicates a footplate that is set in the walkway in such a manner that the blind child will step on it as he approaches the entry. This will start a talking book recording that will explain to the child where he is located now and what lies just ahead.

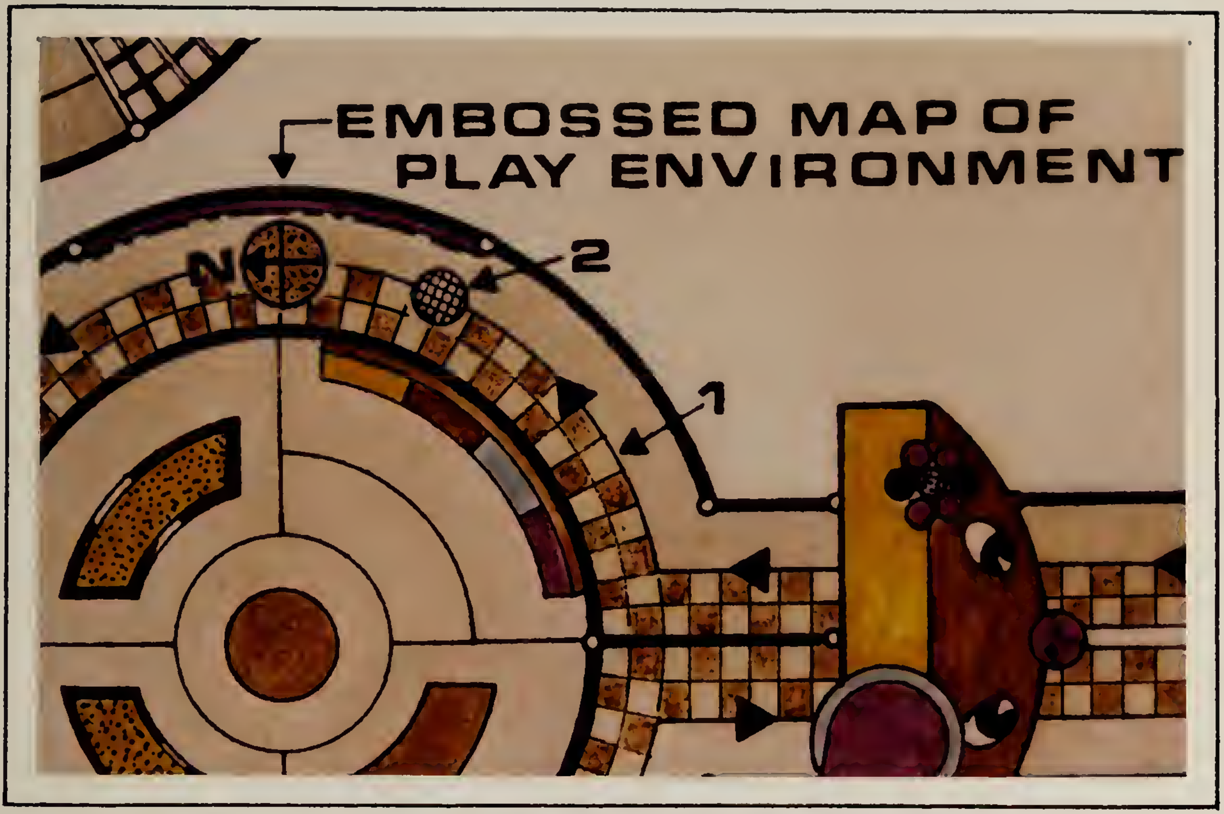
Arrow Number Four points out a red ball on a chain and a yellow sponge rubber pad at the tops of the cutout shapes at both the entry and the exit. The red ball is a warning device to alert the taller blind child to duck his head as he enters or leaves to avoid a bump, and the yellow sponge rubber pad cushions the bump just in case he forgets to duck.

By defining the entry with these cutout shapes, the blind child can actually feel himself making the transition into his new play environment.

Print of Slide (Number 6) Sketch of Entry



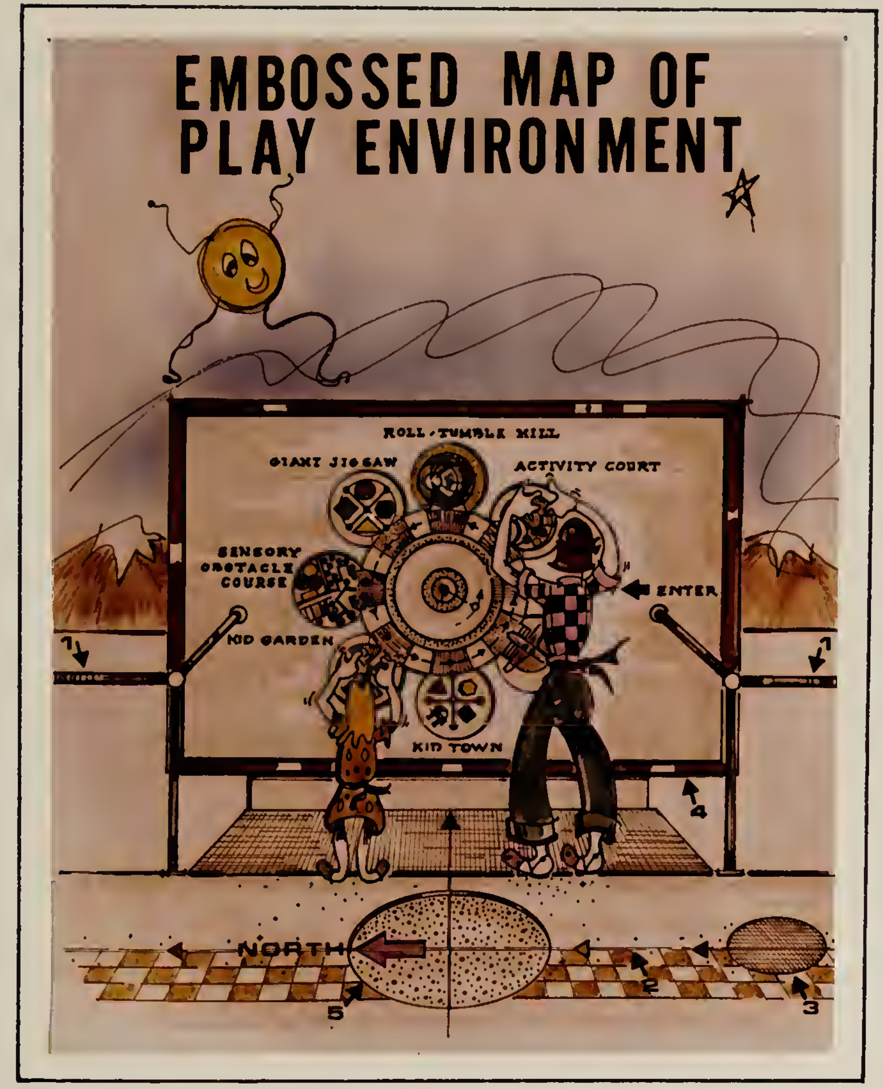
Print of Slide (Number 7) Plan View of Embossed Map of Play Environment



NARRATION

Just inside the entry, as the blind child follows along the textured walkway using the continuous handrail as a guide as he needs to, the first important design element he will come upon will be an embossed, tactile map of the entire play environment that he is about to explore.

Print of Slide (Number 8) Sketch of Embossed Map of
Play Environment



NARRATION

To the child it might actually look and feel something like this. Again note the small number arrows.

Arrow Number One indicates the continuous handrail that is always there if the blind child needs it, but as you will see he will be encouraged to use other sensory cues to direct his movements.

Arrow Number Two again points out the guiding edge where the textured brick meets the smoother concrete walkway. Once the blind child learns to effectively follow this textured edge with his feet, he will only occasionally need the assistance of the handrail to guide his mobility.

Arrow Number Three again indicates the footplate that will activate the talking book recording when the blind child steps on it as he approaches the embossed map of the play environment.

Arrow Number Four points out the embossed, tactile map itself. By listening to the talking book recording as it describes and explains the layout of the play environment, and by using his fingertips to explore and analyse the embossed surface of the tactile map, the blind child can begin to gain an understanding of the overall orientation of the entire play environment that will greatly improve his ability to effectively circulate from one play court to the next one of his choosing. Studies have been made by Kidwell at Massachusetts Institute of Technology and by others that tested the ability of

blind students to effectively use such tactile maps as this to improve their orientation and mobility skills. These studies have shown that through the use of such tactile maps the blind may begin to learn such very basic information as the layout of their homes and neighborhoods, and the system of sidewalks and pedestrian crossings they must navigate to effectively travel a route between their home and school, or to their neighborhood grocery store.

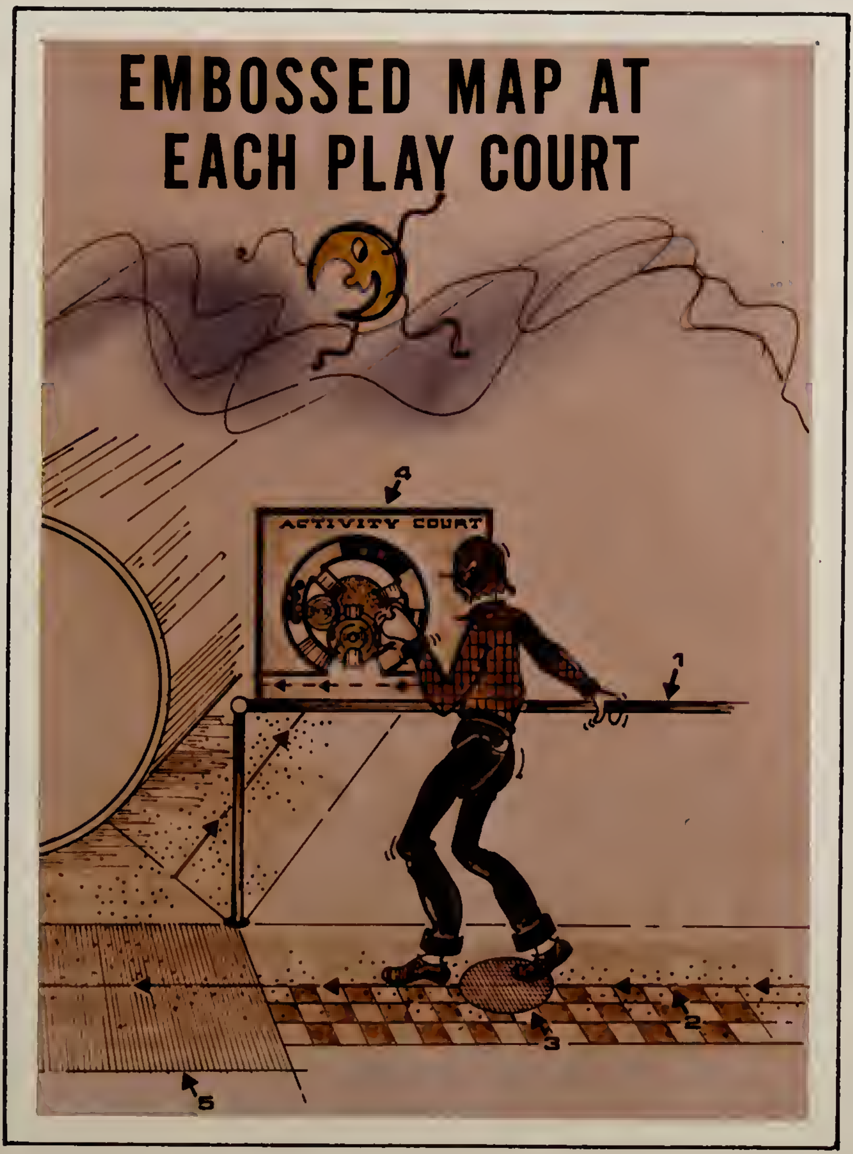
Arrow Number Five indicates a circular compass set in relief in the walkway. Through the assistance of the talking book recording and the embossed, tactile map, the blind child will be able to use his feet to read the compass direction and to orient himself to a more effective understanding of the locations of the unseen spaces that make up this play environment. Studies by Berla, Lord, and others using blind children as subjects have concluded that developing the ability to determine and effectively use compass direction is a major step toward achieving independent mobility.

At this point, please make your first evaluation of this study. On page two of the questionnaire, place a check mark in one of the four spaces after design element number one. In your professional judgement, how effective do you think this embossed map will be in helping the blind child to develop in his play a greater degree of mobility and/or orientation skill?

NARRATION

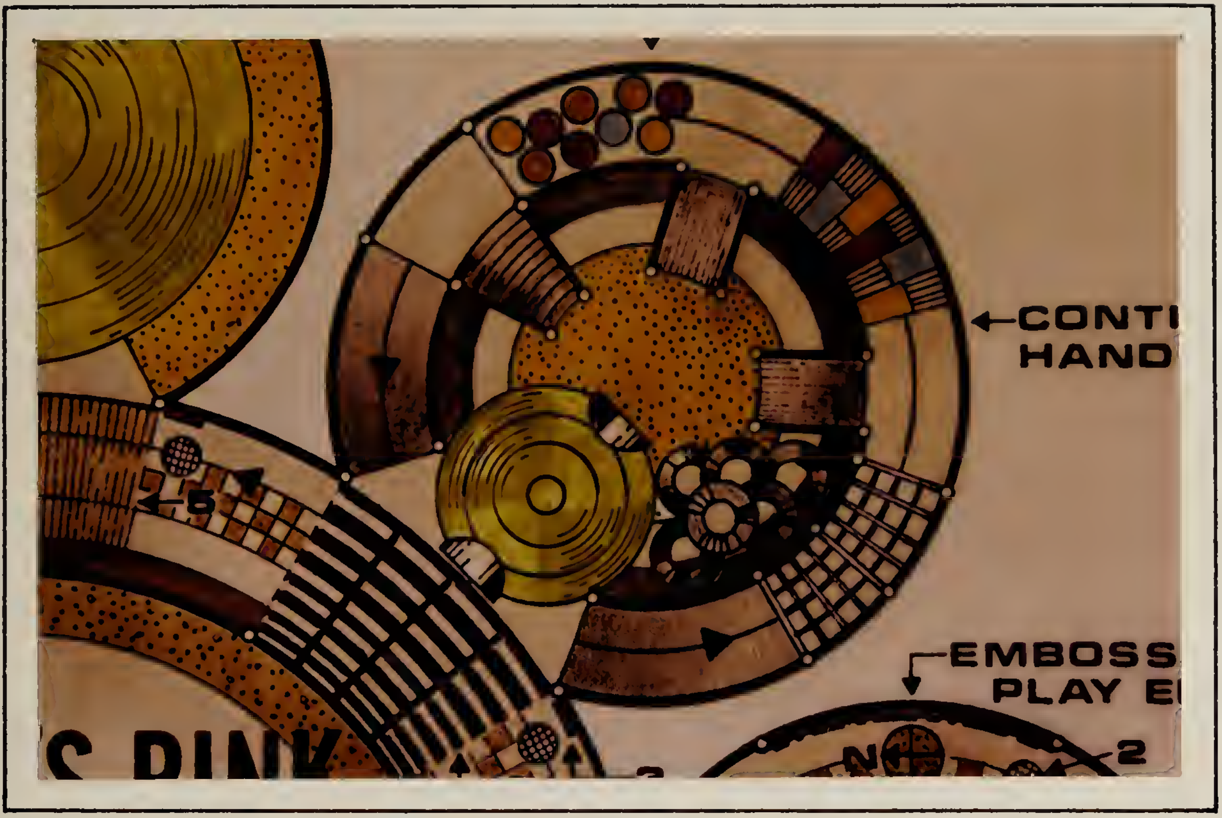
In addition to the first embossed map of the entire play environment, as the blind child circulates along the textured walkway he will encounter another embossed map at the entrance to each individual play court. This map, along with another talking book recording, will remind the child through his fingers and his ears just what that particular play court has to offer that might be of play interest to him.

Print of Slide (Number 9) Sketch of Embossed Map at each Play Court



EMBOSSED MAP AT
EACH PLAY COURT

Print of Slide (Number 10) Plan View of Activity
Play Court



NARRATION

The first play court that the blind child will encounter as he circulates along the textured walkway following the continuous handrail is called the activity court because of the many different types of play activities available. Here, by using his remaining senses, the blind child can begin to learn how to climb up and down, to crawl over and under, to jump and to balance, and even to fall safely into the soft, sandy pit you see indicated in yellow in the center of the court.

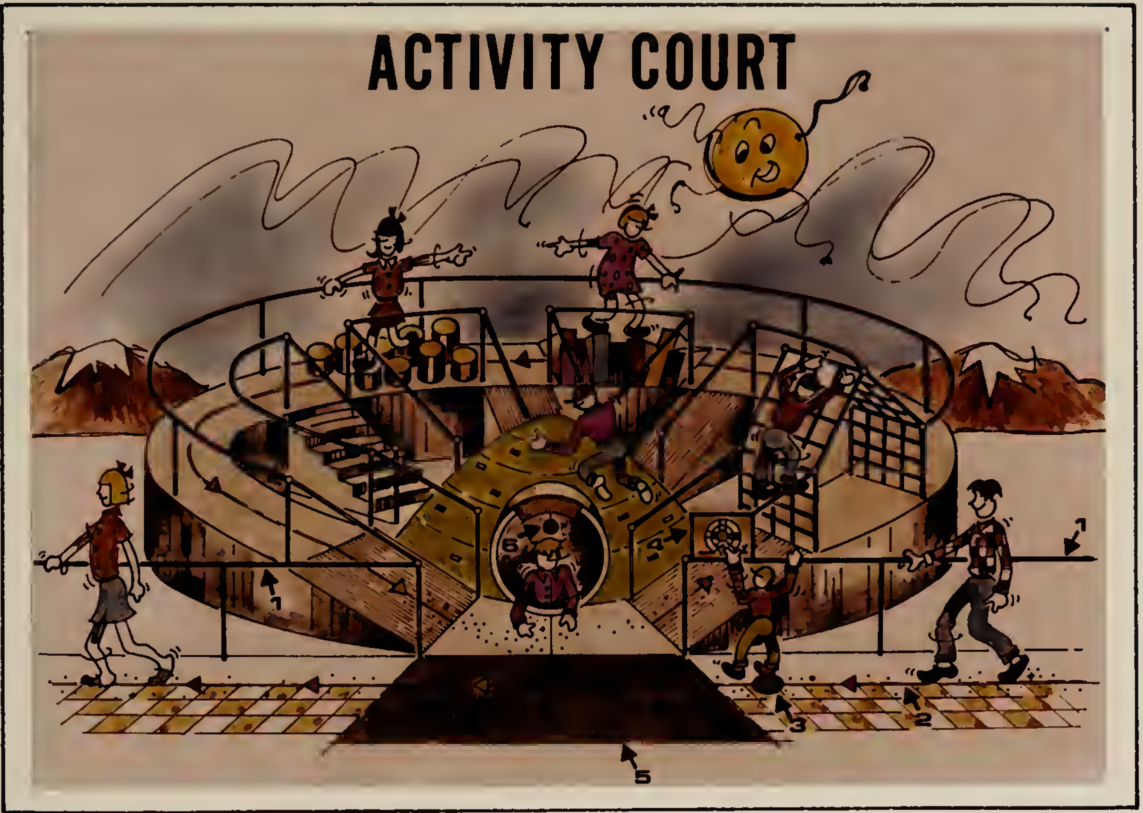
Note that Arrow Number Four points out an overhead shelter across the textured walkway at the entry to this play court.

NARRATION

For the blind child, this overhead shelter provides another sensory cue that he can learn to use to locate the entry to the court. Lord, in a recent study that tested the mobility and orientation skills of nearly two-hundred young blind children, discovered that developing the skill to determine the presence of an overhead shelter can be an important asset to effective mobility. The blind child has the potential to learn such a skill by developing his ability to detect the change in temperature in a cast shadow, or by sensing the change in quality of the sound of his foot steps as he enters a space that is enclosed above. In an actual street scene, the ability to detect and follow the guiding edge of a shadow cast by an adjacent wall or building can provide the blind with another valuable sensory cue to improve their safe mobility.

Print of Slide (Number 11) Cross Section of Overhead Entry to Activity Play Court

Print of Slide (Number 12) Sketch of Activity Play Court



NARRATION

In actual use, the activity court might look something like this.

Arrow Number One indicates that the continuous handrail is always there to guide the child both in circulation and in play. There will actually be two handrails. One will be an inside rail that will be textured and the other will be an outside rail that will be smooth. Thus, if any time in his play the blind child becomes confused or disoriented, all he needs to do is to reach for the nearest handrail and his fingers will tell him where he is at and in which direction he is heading.

Arrow Number Two indicates the guiding edge on the walkway where brick meets concrete.

Arrow Number Three points out the footplate that activates the talking book recording as the child approaches the court.

Arrow Number Four indicates the embossed map of the play court at the entry.

Arrow Number Five points out the shadow cast by the overhead shelter that helps the blind child to locate the entry to the court. Note again, that all of the play items here are stationary and it is the blind child who must learn to move effectively to participate.

Arrow Number Six indicates the same warning device you saw before, the red ball and the yellow sponge rubber pad at the entry to the kid tunnel to warn the blind child to duck his head to avoid a bump.

The blind child who can learn to use his remaining senses to successfully participate in these types of play activities has established the basic foundation upon which his adult mobility and orientation skills can be built. According to such authorities as Lowenfeld, Moor, and others, those blind children who are not guided and encouraged to learn such skills in their childhood, very often do not learn them at all.

At this point, please make your second evaluation of this play environment. Place a check mark in one of the four spaces after

design element number two. In your judgement, how effective do you think this activity court will be in helping the blind child to develop in his play a greater degree of mobility and/or orientation skill?

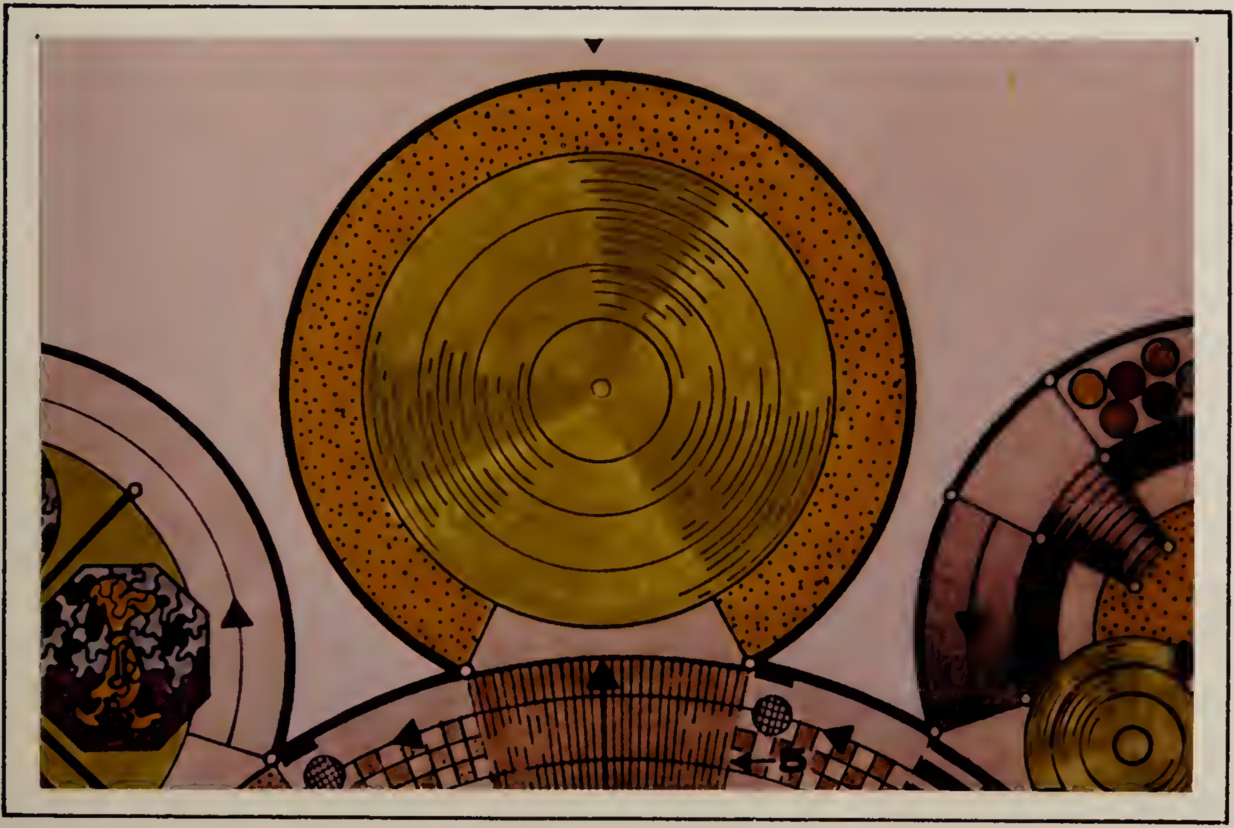
NARRATION

The next play court available to the blind child as he circulates along the textured walkway is roll and tumble hill. In sharp contrast to the complex variety of activities in the first play court, this court offers the most simple type of play activity; but one that seems to be loved by all children everywhere. All it amounts to is a gently sloping green, grassy hill surrounded by a soft sandy base shown in yellow to cushion landings at the bottom.

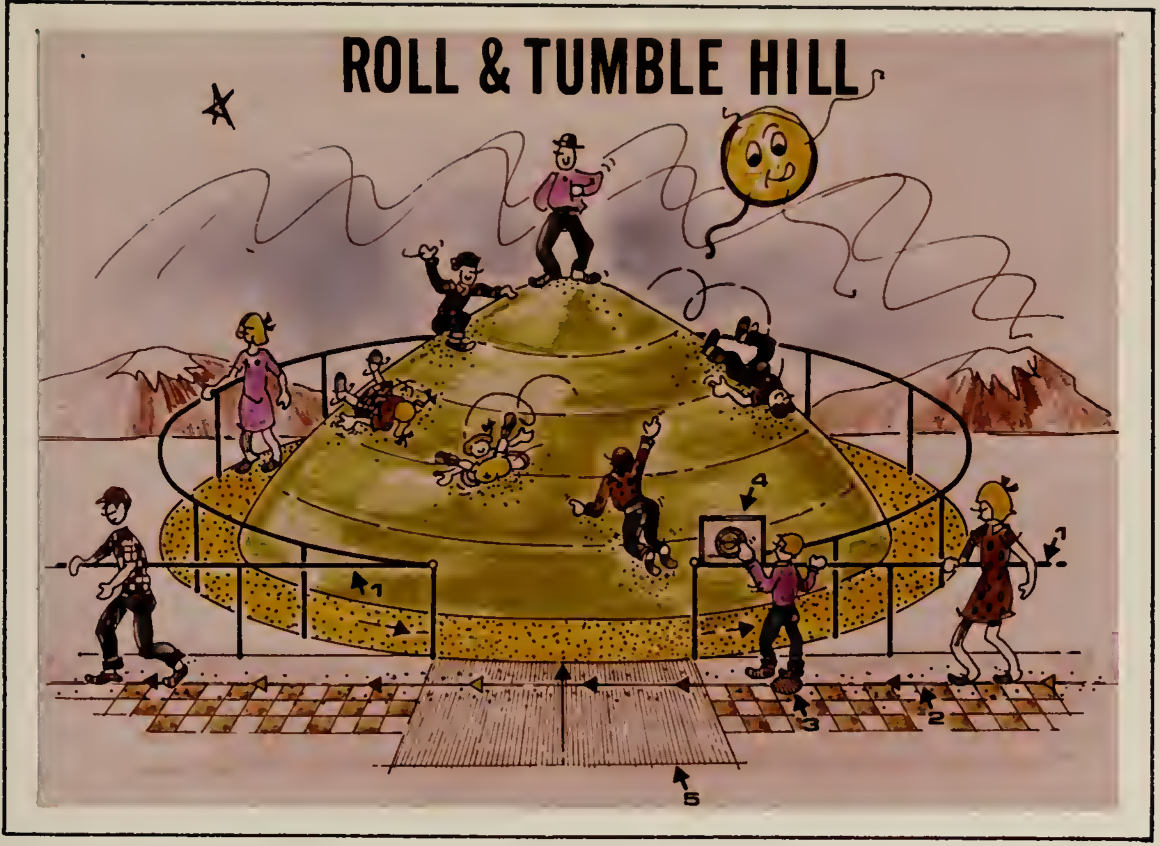
Note that Arrow Number Five points out another type of sensory cue to help the blind child to locate the entry to this play court. In this case, the walkway is cross-sloped at the entry at a sufficient angle to allow the child to detect the change in slope with his feet and thus find the entry.

An important study by Gobetz at Kent State University involving an investigation of the mobility skills of blind children, emphasized the importance of helping blind children to learn the ability to detect changes in slopes. It has such real-life applications as being able to find the top and bottom of a sloped ramp leading into the busy crosswalk of a street, or having the ability to sense the cross-slope of a dangerous driveway where it crosses a sidewalk.

Print of Slide (Number 13) Plan View of Roll and Tumble Hill Play Court



Print of Slide (Number 14) Sketch of Roll and Tumble Hill Play Court



NARRATION

This is how roll and tumble hill might look to the child on the ground.

Arrow Number Five points out the cross-slope across the walkway that helps the blind child to find the entry into the court by detecting the change in slope with his feet.

This particular play activity, although a very simple one, could be a very important one to the young blind child who hasn't yet developed the confidence to let himself go in play. Once he discovers here that he can't get hurt in climbing up and tumbling down this grassy slope, he may begin to develop a mobility confidence that can free him forever from a life of sitting and waiting to be led around.

Repeatedly, experts such as Buell, Barraga, Tait, and others have stressed the fact that overcoming his fear of unseen space is one of the major steps a blind child must accomplish if he is to develop the self-confidence required to learn effective mobility and orientation. Such a safe, carefree, roly-poly play activity as this could provide just the type of environment that might coax the young, hesitant blind child with all of the instinctive needs to play, to let go of that handrail and give it a try.

At this point, please make your next evaluation of this study. Place a check mark in one of the four spaces after design element number three. In your judgement, how effective do you think this roll and tumble hill will be in helping the blind child to develop in his play a greater degree of mobility and/or orientation skill?

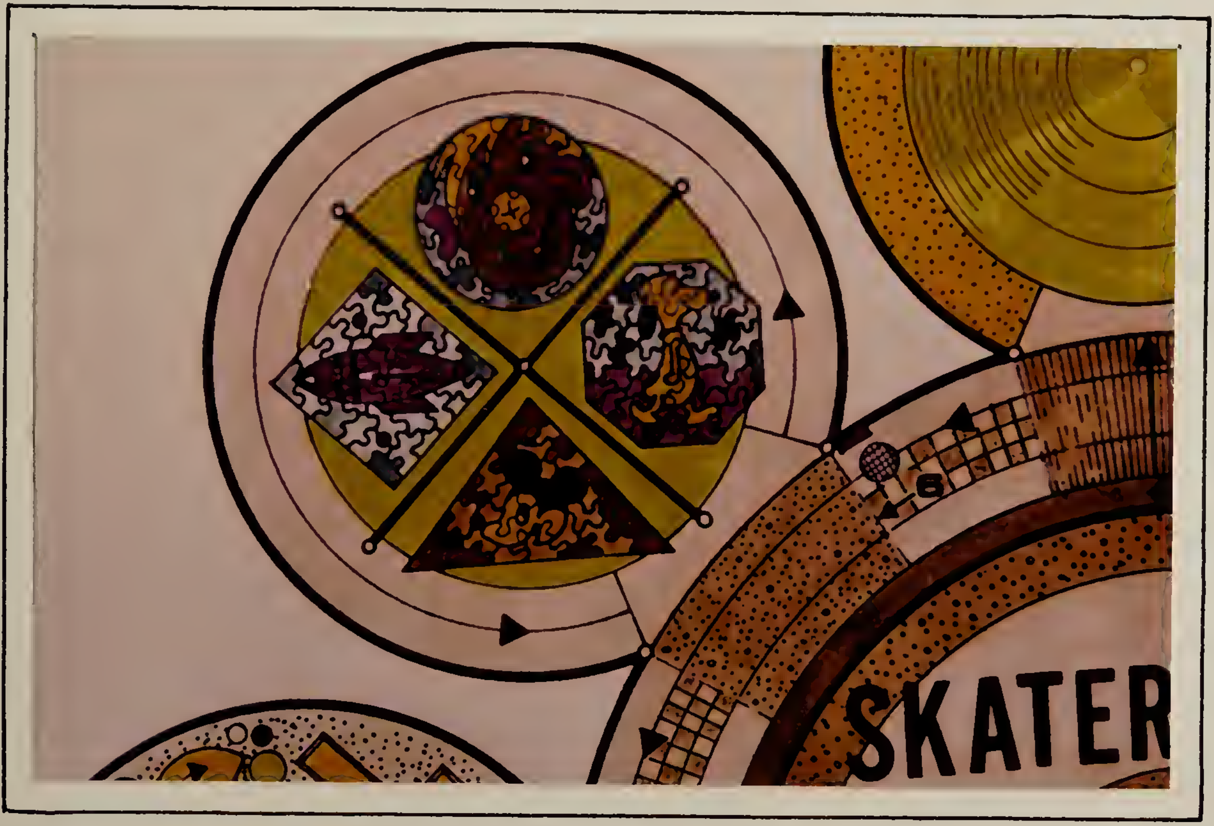
NARRATION

The next play court available to the blind child as he continues to explore his new play environment is the giant jigsaw, and as you can see it is a very different type of play activity.

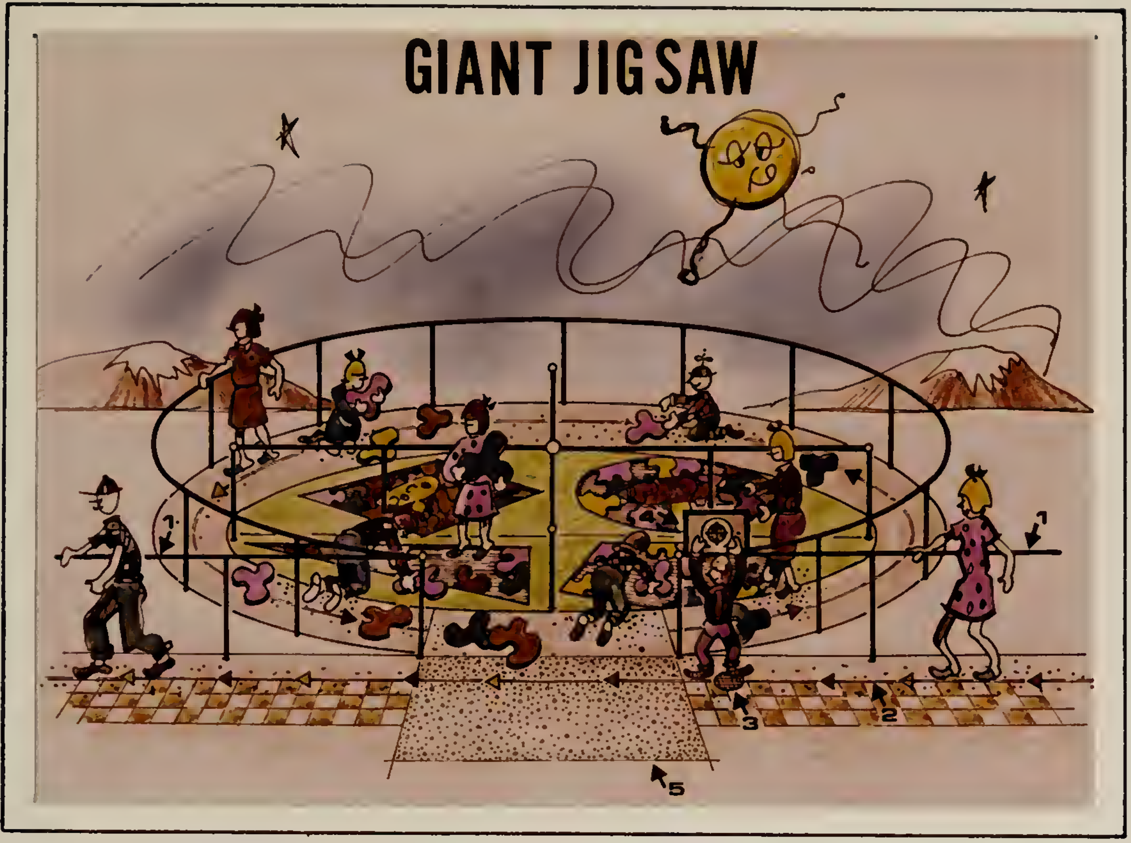
Arrow Number Six points out another important sensory cue that will help the blind child to locate the entry to this play court. In this case, there is a distinct change in surface texture of the walkway at the play court entry and with a little practice the child can learn to find and follow this change in texture through the soles of his shoes. Such a change in texture could be accomplished by using nothing more than a washed aggregate finish commonly found in actual street situations.

It is very important for effective mobility that the blind child learn to detect such sensory cues through his feet, because more and more in modern designs such textural variations are being provided as warning devices for the benefit of the blind at such critical locations as the top and bottom of a flight of stairs, the edge of a street curb, or at the entrance to an elevator.

Print of Slide (Number 15) Plan View of Giant Jigsaw Play Court



Print of Slide (Number 16) Sketch of Giant Jigsaw
Play Court



NARRATION

This is how the giant jigsaw might operate in actual use.

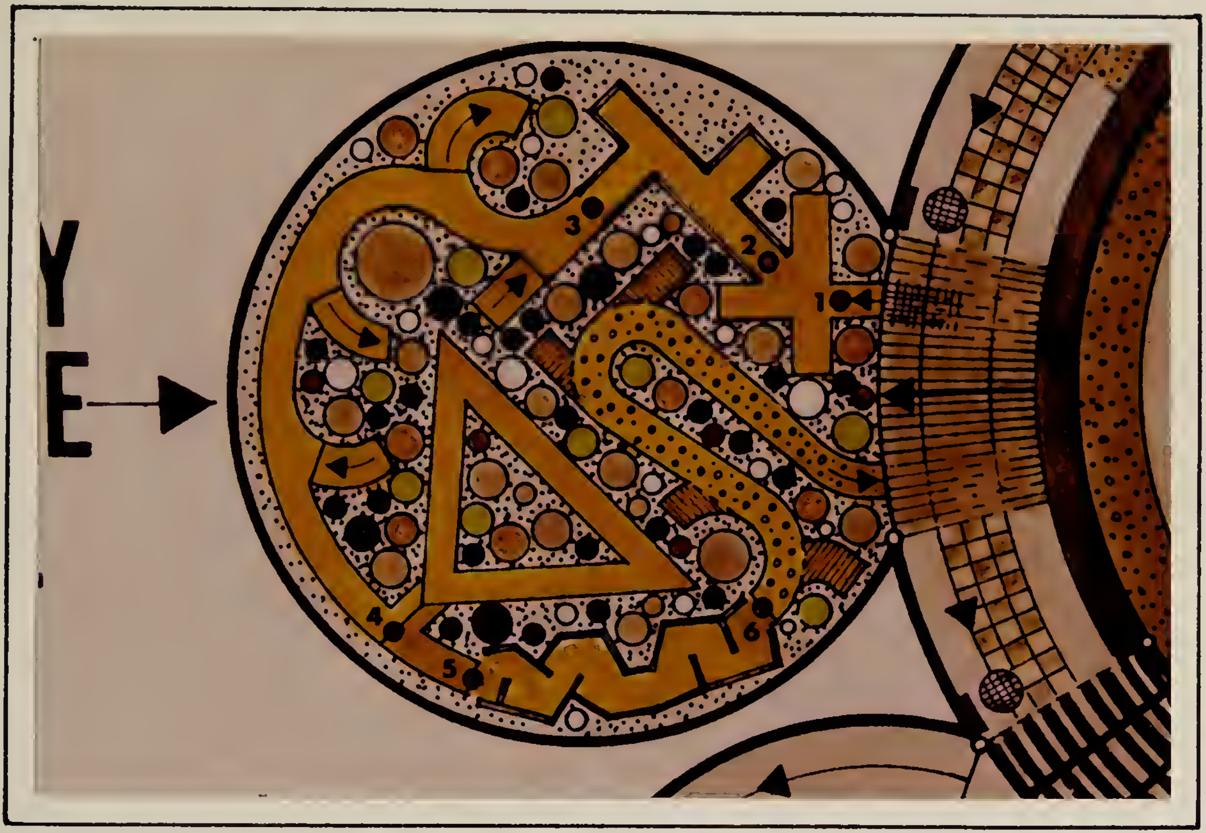
Arrow Number Five points out the distinct change in texture of the walkway at the entry to the court.

The giant jigsaw court in many ways is especially suited to the capabilities of the blind child. The jigsaw parts will be made of a lightweight yet durable plastic material, and the surface of the picture itself will be embossed. Thus, not only will the blind child be able and required to correctly fit the edge surfaces of the puzzle parts together, but he will also be able to read the embossed face of the picture puzzle as he assembles it; all by sense of touch.

Lowenfeld tells us that although a blind child must learn to use all of his remaining senses to compensate for his lack of vision, it is only through his ability to use his sense of touch that he can gain an actual knowledge of the tools and materials and objects in the unseen world that surrounds him. It is only through his ability to use his sense of touch that he can obtain concrete knowledge of size and shape, weight and texture, hardness or softness, and even temperature. Thus, the ability of a blind child to develop and use his sense of touch will very often be directly related to the degree to which he can effectively relate to significant objects in the world around him.

Remember that orientation, as defined in this study, refers not only to the ability to determine position and direction but also to an effective relationship to significant objects in the surrounding environment, and the ability to utilize available tools and materials. At this point, please make your next evaluation of this play environment. Place a check mark in one of the four spaces after design element number four. In your professional judgement, how effective do you think this giant jigsaw will be in helping the blind child to develop in his play a greater degree of orientation skill?

Print of Slide (Number 17) Plan View of Sensory Obstacle Play Course



NARRATION

The next play court available to the blind child as he continues to circulate along the textured walkway is called the sensory obstacle course. This is how it would work. As the child approaches the entry to this court, he will step on the footplate that will activate the talking book recording at the embossed map. Here, through his fingers and ears, he will obtain an orientation of the overall layout of the court and a description of some of the basic ground rules that apply here.

The blind child will then enter the course and attempt to successfully follow the auditory and tactile sensory cues he will receive as he moves along the obstacle pathway shown in yellow on the slide. The little red circles located at key points in the middle of the yellow pathway indicate additional footplates that the blind child will step on which will activate a brief recorded message to make the child aware of an important decision he must make just ahead.

At Footplate Number One the blind child will be told in the recording that there is an intersection in the pathway with four possible alternatives. One path leads straight ahead and dead ends. Two other paths turn 90 degrees to the right and left and dead end. A fourth choice makes a 45 degree turn to the right and this is the pathway he should follow. For a sighted child, this would be a very simple and obvious decision to make but it is not so simple for the young blind child who cannot see where is right, where is left, or where is straight ahead. Some of the most competent people in this field agree that developing the ability to determine right from left and to orient to a compass direction are abilities all blind children

should learn as early in life as possible. Out on the street, the blind child must be able to make a very similar orientation at every street intersection he encounters just to stay alive.

Having made the correct decision at the intersection, the child will next come to Footplate Number Two where he will be told that he will now pass through an enclosed corridor at the end of which is located a fixed sound source that the blind child can hear and follow. However, the corridor is not just a straight pathway, and in order to find his way successfully to the end of the corridor and the sound source the child must be able to read the increasing intensity of the sound as he approaches it, and thus avoid the dead end passageways. Experts tell us that developing the ability to establish a line of travel in relationship to an adjacent or local sound source is another extremely valuable skill for effective mobility. One obvious example of this would be the ability of a blind person to establish a safe line of travel by using his skill to differentiate intensities of sound received from an adjacent traffic way.

Having correctly located the sound source at the end of the corridor, the blind child will next come to Footplate Number Three. Here, he will be told that he must now follow a curving but level pathway ahead. Any change in slope that his feet detect will warn him that he is moving off the main path and onto a dead end side path. Some of these side paths will slope up, some will slope down, some will slope sharply, and some will slope very slightly, but with practice the blind child has the ability to detect each one and to avoid it. The black arrows on the slide indicate these sloping side paths.

Having successfully negotiated this circular, level pathway, the blind child will next come to Footplate Number Four where he will be told to make a 90 degree turn to the left and walk a distance of six feet to the apex of a triangular shaped pathway which has 45 degree angles and sides twelve feet long. With this amount of auditory guidance, the blind child can learn to develop the abilities to follow a specific geometric pattern, to orient to a distinct angular line of travel, and to measure a definite distance covered. All of these are abilities that every blind child should learn in order to move about independently and effectively.

Having successfully circulated around the triangular shaped pathway, the blind child will now proceed to Footplate Number Five. Here, he is told that he will next pass through an angular tunnel in which he will be expected to use his ability to read the intensity of sound echoes produced by his footsteps, his voice, or by the clapping of his hands as these echoes bounce off of obstacles lying in his path and are reflected back to him as warnings. Most writers agree that with proper training a blind person can develop such an obstacle perception through his ability to detect high-frequency sound wave echoes, and this perception permits him to maneuver around barriers and obstacles that he cannot actually see. Cratty, as a result of his work with blind children at the University of California at Los Angeles, has recommended that such play environments as this one be included in the play activities of young blind children so that they may begin to develop at the earliest possible age this very important mobility skill.

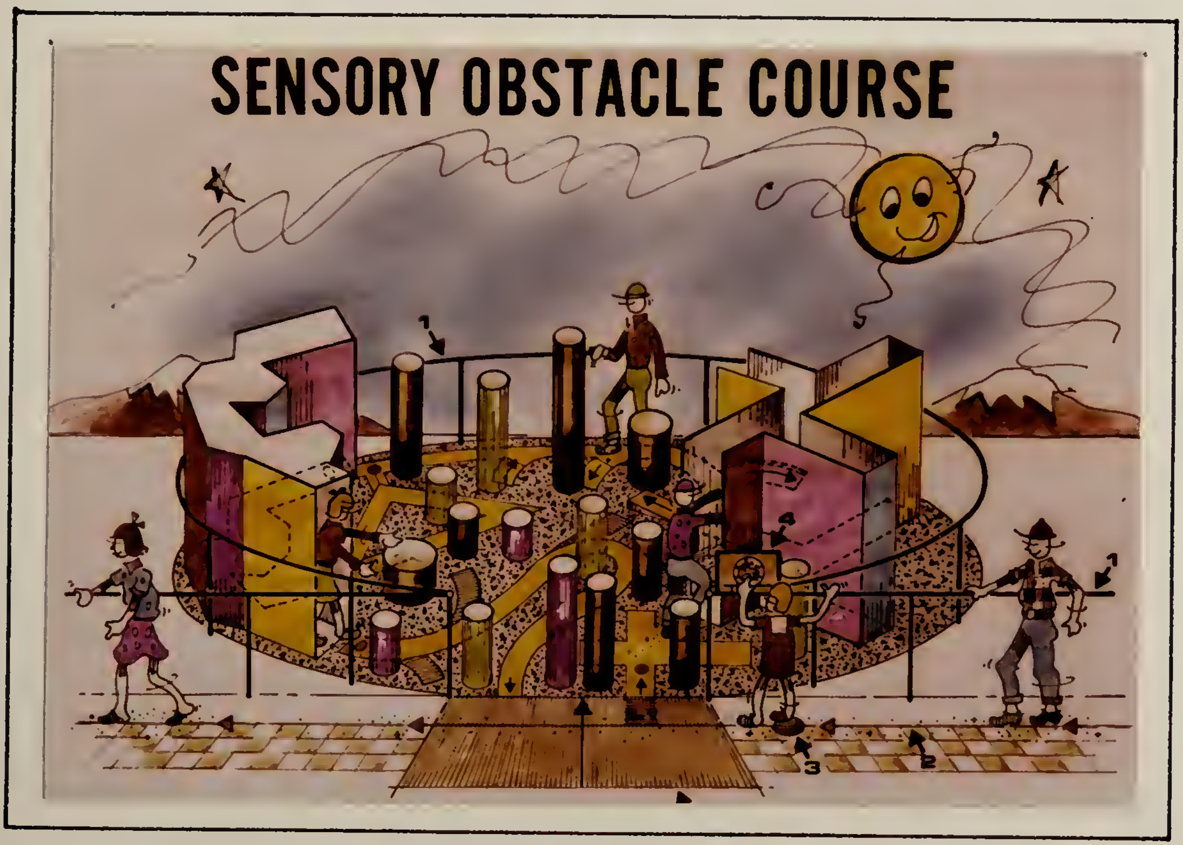
At Footplate Number Six the blind child will be told how he can successfully complete his conquest of this obstacle course by using his ability to follow with his feet a specific surface texture along another stretch of meandering pathway. This will bring him to the end of the obstacle course if he can detect and avoid the dead end side paths that have a different surface texture.

NARRATION

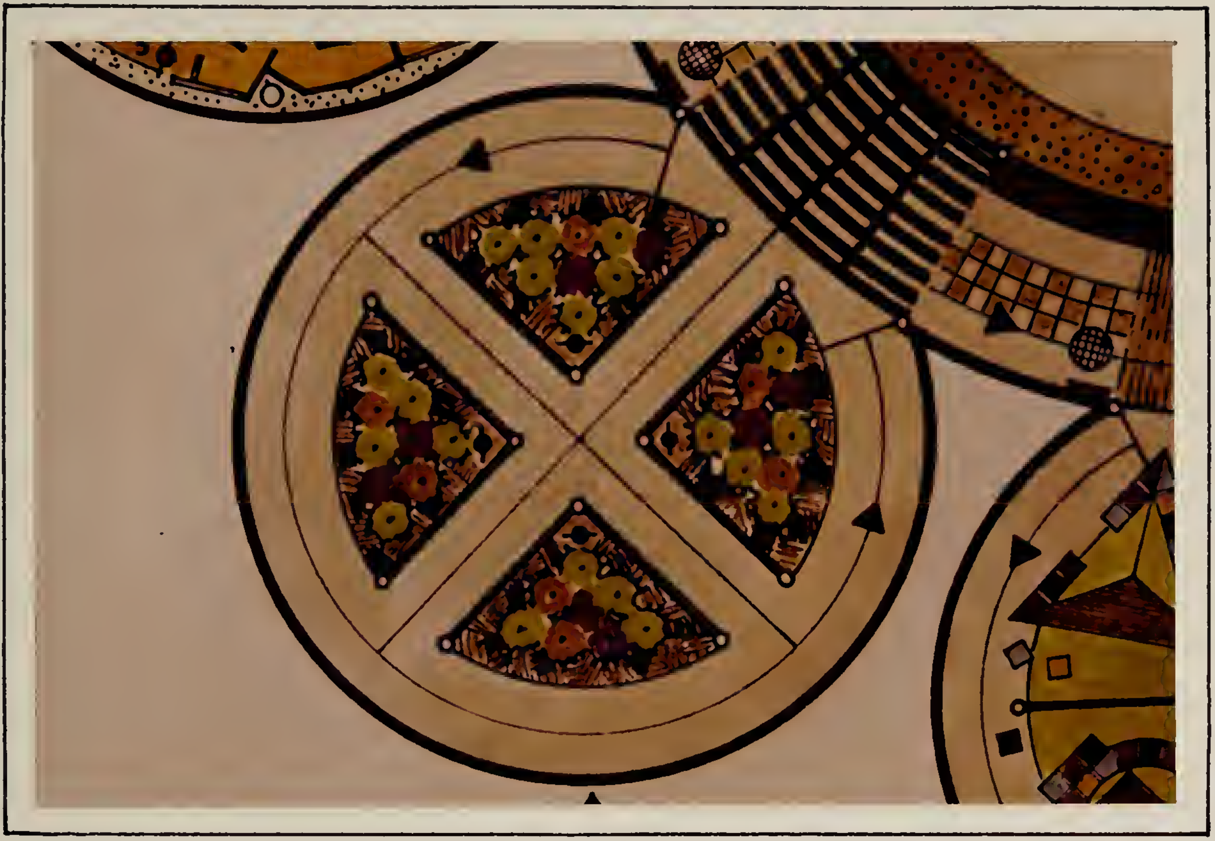
To the child on the ground, the sensory obstacle course might operate something like this.

At this point, please make your next evaluation of this study. In your judgement, how effective do you think this sensory obstacle course will be in helping the blind child to develop in his play a greater degree of mobility and/or orientation skill? Please check one of the four spaces after design element number five.

Print of Slide (Number 18) Sketch of Sensory Obstacle Play Course



Print of Slide (Number 19) Plan View of Kid Garden
Play Court



NARRATION

The next play court is the kid garden and it probably emphasizes the large variety of different types of play activities in this play environment more so than any of the other play courts.

NARRATION

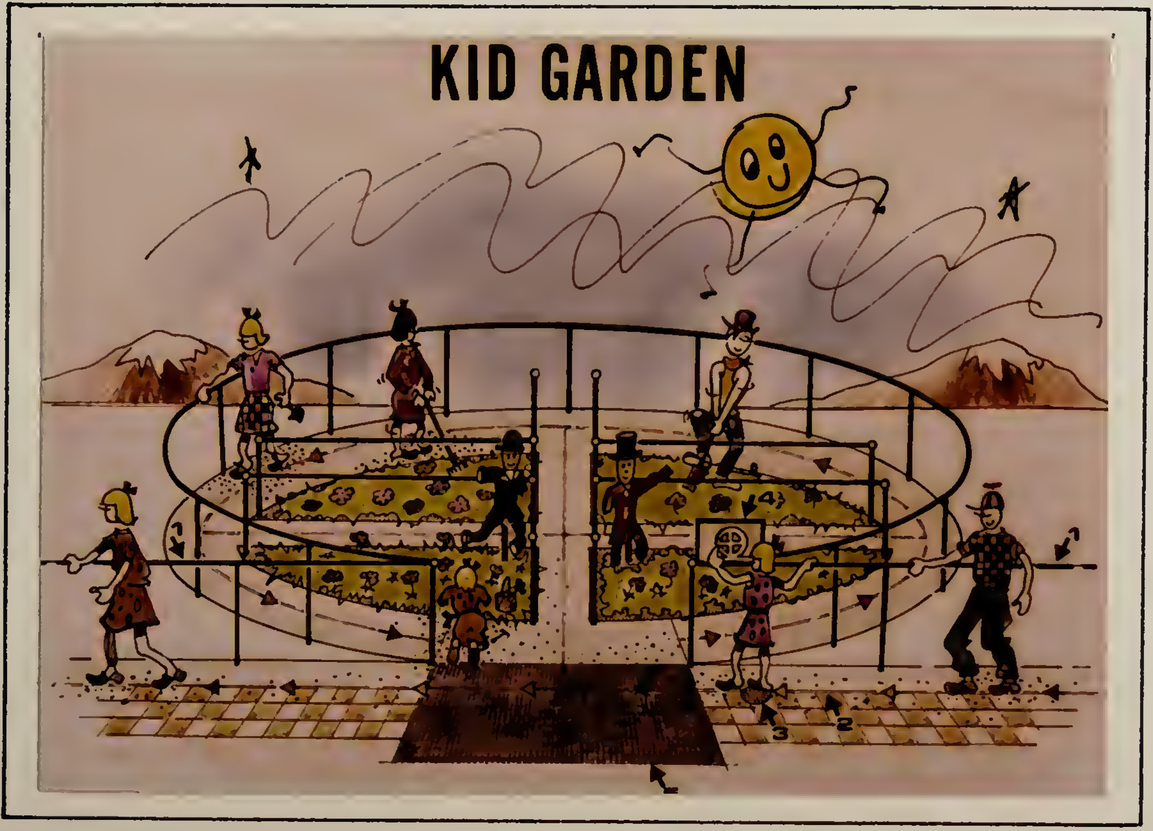
This is how it might look to the child in actual use. Someone once said that kids, like adults, are different and an inspection of any playground will tend to verify this. While many children will be attracted to the noisiest and most active types of play, others tend to prefer a quieter place like this one, off by itself.

Actually, gardening is an ideal activity for the blind because it is one of those types of play activities, hobbies, or even vocations in which the blind can excell without the need for sight. Here, a blind child can learn to develop his sense of touch to dig, rake, and to hoe in the soil as well as any sighted child. He can also learn to use his sense of smell to appreciate the fragrance of a new blossom, and his sense of taste to enjoy the flavor of a newly harvested crop of potatoes or radishes.

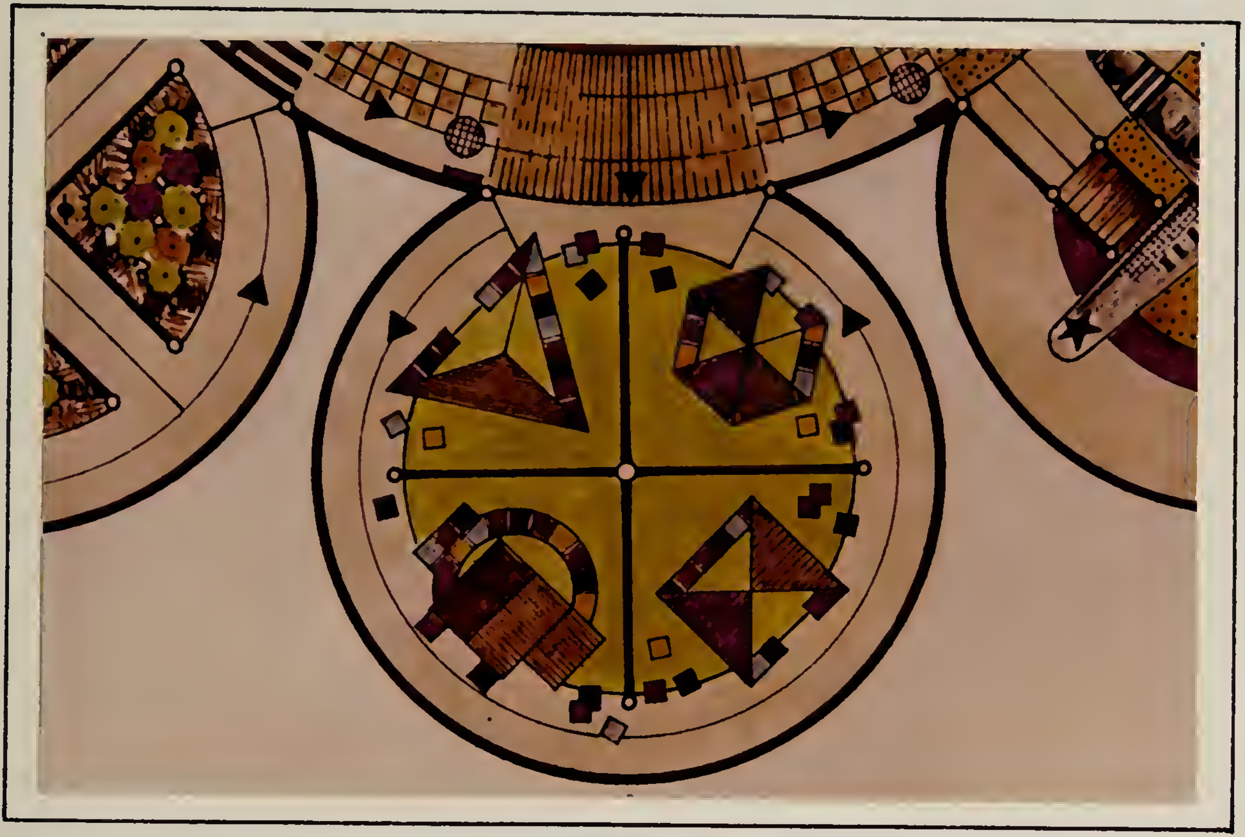
People like Lowenfeld, Terry, and others who have worked with blind children state that gardening has distinct advantages in helping the child to begin to learn how to handle tools and materials, to better relate to those natural elements in his environment that will affect him all of his life, and perhaps to begin to develop an interest and skill that may benefit him as a hobby or possible vocation long after he has left the surroundings of this play area.

At this point, please make your next evaluation of this play environment. In your professional judgement, and in light of the definitions given in this study, how effective do you think this kid garden will be in helping the blind child to develop in his play a greater degree of orientation skill? Please check one of the four spaces after design element number six.

Print of Slide (Number 20) Sketch of Kid Garden Play Court



Print of Slide (Number 21) Plan View of Tactile Kid Town Play Court



NARRATION

The next play court for the blind child to explore is called tactile kid town. Although it is very different from the type of play activity that was provided in the last play court, the kid garden and the kid town are similar in one important way; they both are designed more to develop orientation skill rather than specific mobility.

NARRATION

People like Allen, Bengtsson, and Dattner who have spent many years investigating the play needs of children propose that children all over the world seem to have a real need and desire to build and construct things in their play. The concept of the adventure playground is based on this proposition. The young blind child has this same need and desire, and all he needs is the opportunity to satisfy them, without benefit of sight.

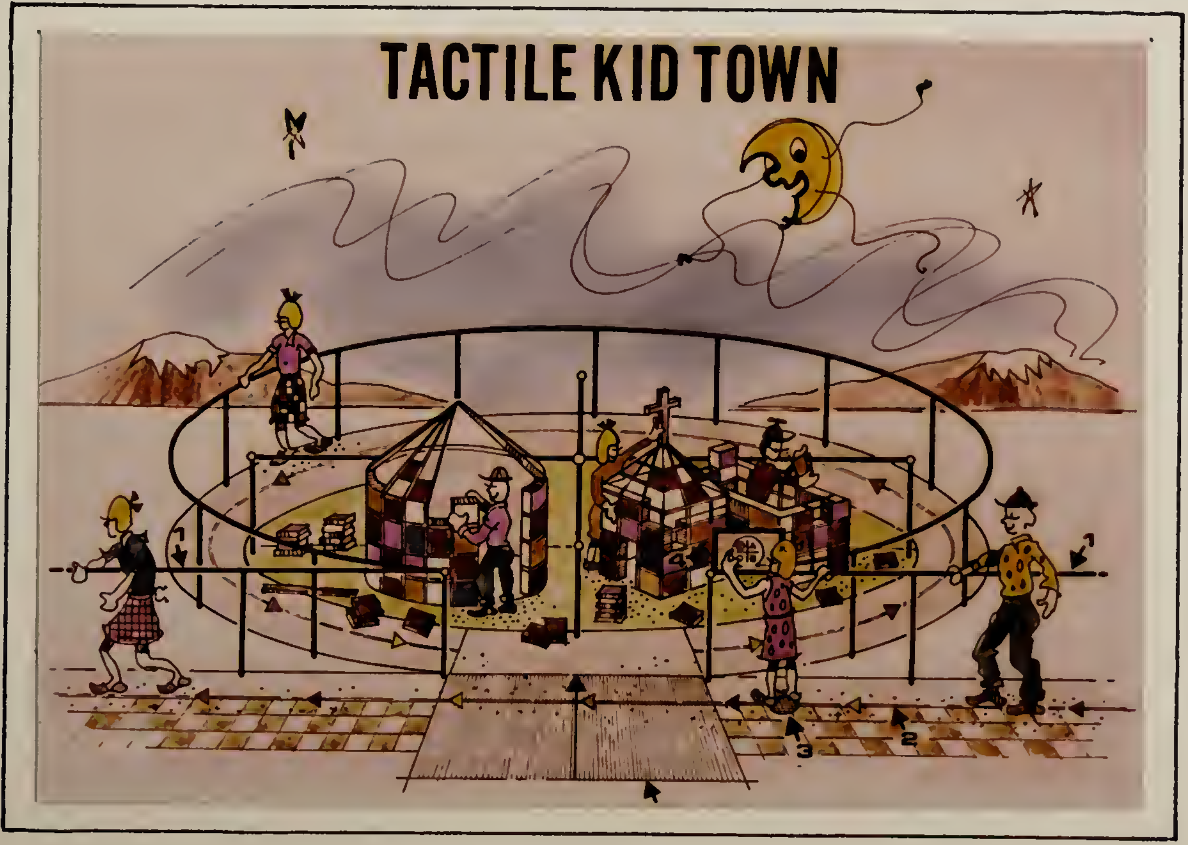
If the sighted child can use nails, hammers, and saws to build his forts and castles, why can't the blind child do the same thing using building blocks and fitting them together by sense of touch using bolts, dowels, and joints. Not only would he be satisfying this basic play need, but he would also be learning to work with and recognize such materials as wood, metal, brick, and plastic.

Writers like McVay and Resnick in their work with blind children state that those children who are encouraged at a young age to begin developing a skill and confidence in their tactual ability by indulging in model building and construction activities such as those shown here, are often able to master at a later age such more skillful tasks as sawing, nailing, drilling, and even operating such a complex tool as a lathe.

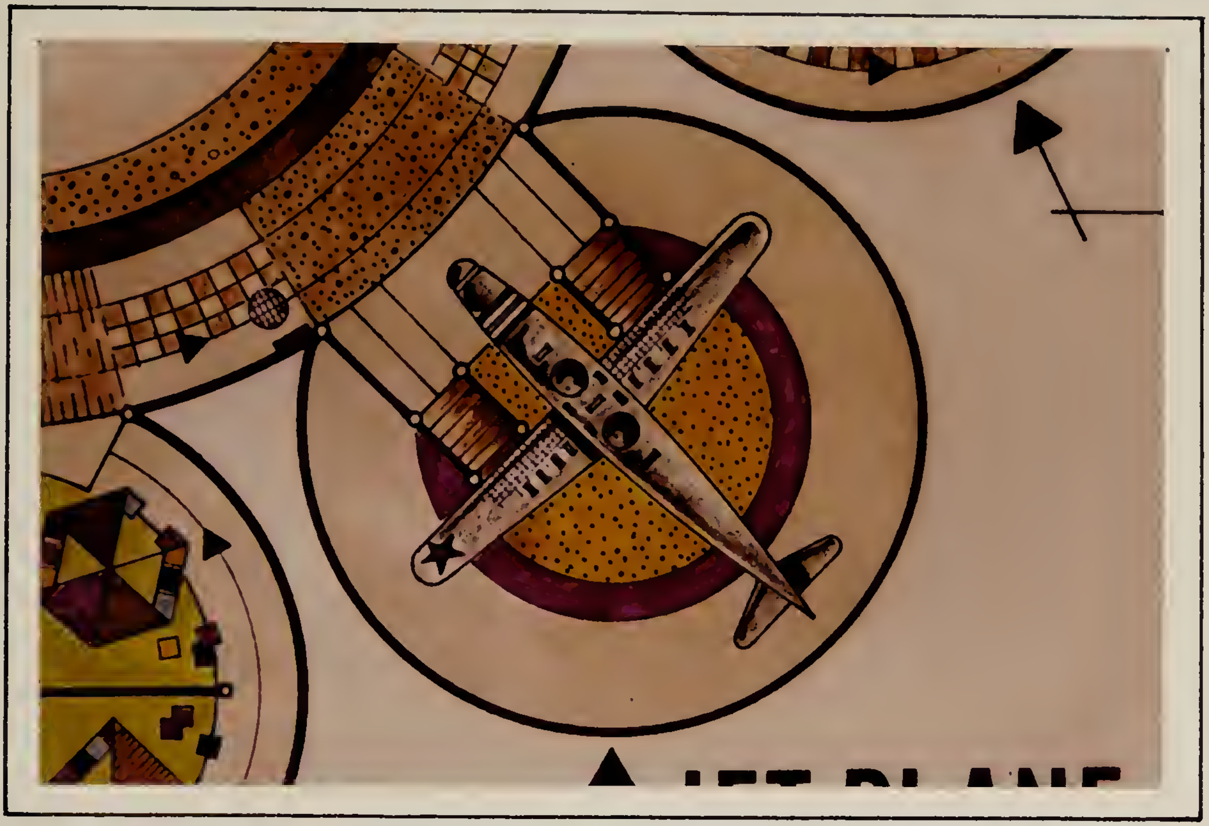
The tactual manipulative skills that the young blind child could begin to learn here today, in play, might spark the beginning of a talent that could result in a successful career in carpentry, masonry, or metalwork.

At this point, please make your next evaluation. In your judgement, how effective do you think this tactile kid town would be in helping the blind child to develop in his play a greater degree of orientation skill? Please check one of the four spaces after design element number seven.

Print of Slide (Number 22) Sketch of Tactile Kid Town Play Court



Print of Slide (Number 23) Plan View of Jet Plane
Play Court



NARRATION

The next play court available is the jet plane court, and again, this is a very simple type of play activity. All it really amounts to is setting the fuselage of a surplus jet plane into a soft, sandy base to cushion falls and jumps. After the sharp edges and corners have been filed off, the rest is provided by the excited heart of the blind child as he takes advantage of this opportunity to explore a "real live" airplane with his own fingertips.

NARRATION

This particular play item emphasizes an important point in attempting to help the blind child to improve his orientation skills. Experts tell us that unless the blind child as he grows, is provided with a wide variety of different types of experiences that he can tactually relate to, like being able to explore the actual size and shape of a real airplane, there is a very real probability that he will acquire a considerable amount of auditory information that he only superficially understands.

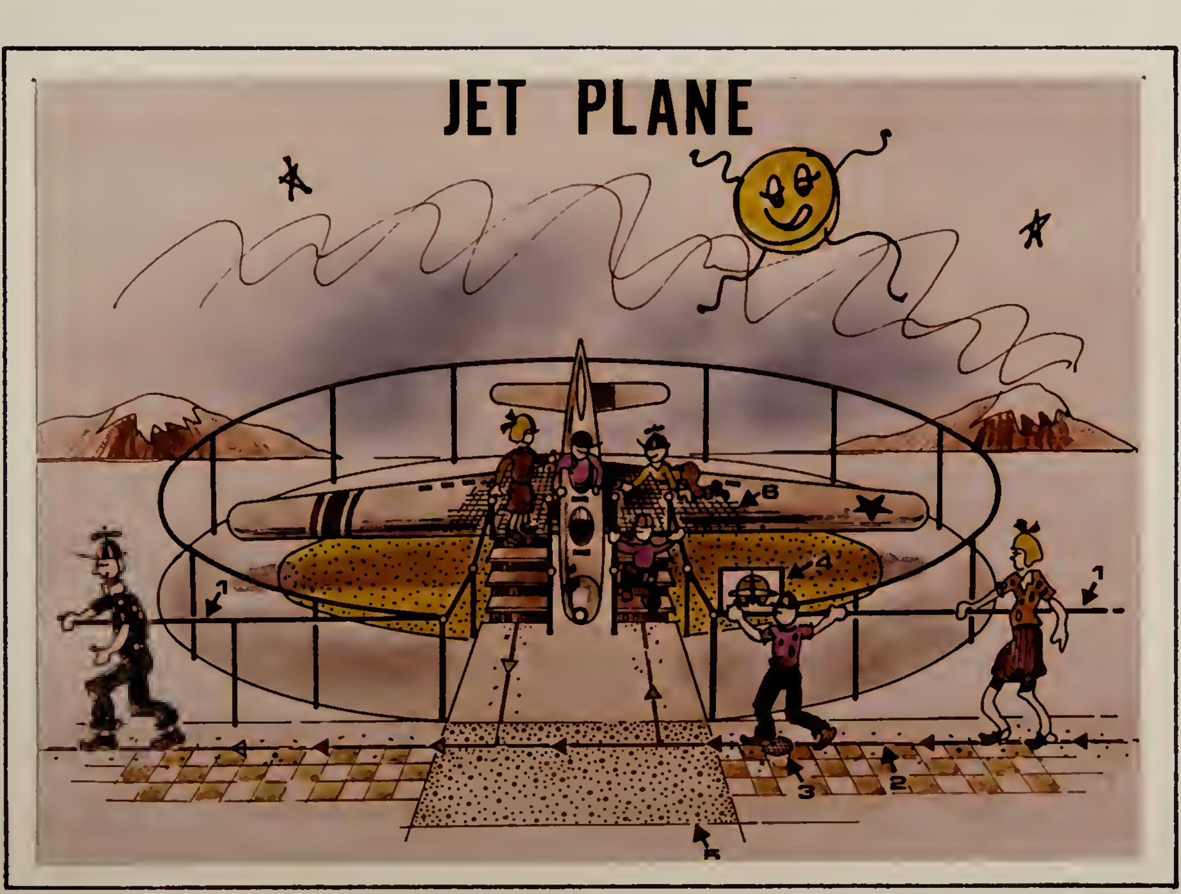
As an example, suppose that you are a blind child and you have never seen an airplane. You are told that an airplane is a large metal object with two wings and a tail that man flies in the sky. Can you imagine the variety of erroneous mental conceptions the child might well develop unless he is actually given the opportunity to clarify this image through the use of his own fingertips.

Here in this play court, after familiarizing himself with the overall layout at the entry through use of the embossed map and the talking book recording, the blind child is then free to enter the court and explore the jet plane to his heart's content.

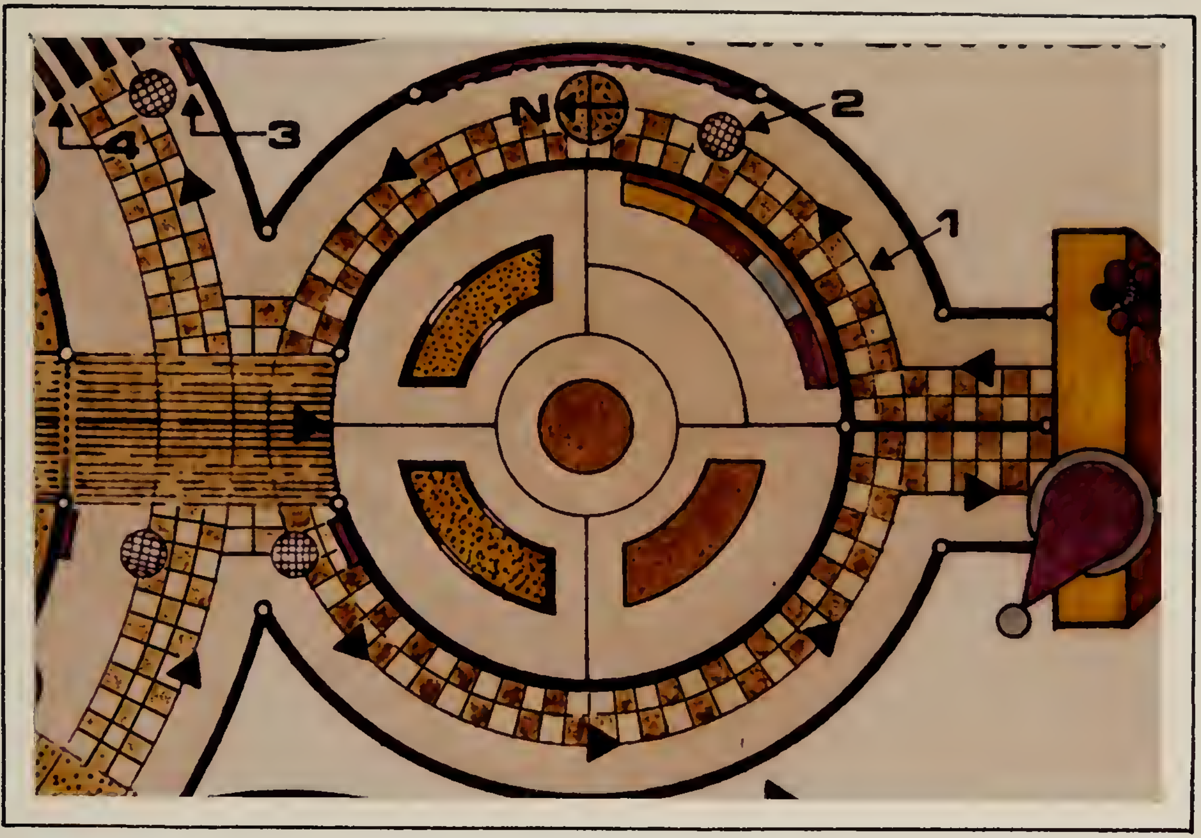
By use of the double-railed, stepped ramp, he is able to climb up onto the wing and into the cockpit. Note that the wing surface itself has been covered with a textured material to provide the exploring child with a safer, slip proof surface for crawling, and at the same time the information through his fingertips that this is the safe area to explore.

At this point, please make your next evaluation of this play environment. In your judgement, how effective do you think this jet plane court will be in helping the blind child to develop in his play a greater degree of orientation skill? Please check one of the four spaces after design element number eight.

Print of Slide (Number 24) Sketch of Jet Plane Play Court



Print of Slide (Number 25) Plan View of Artist's Corner Play Court



NARRATION

The next play court that the blind child will discover as he continues to explore his new play environment is called the artist's corner.

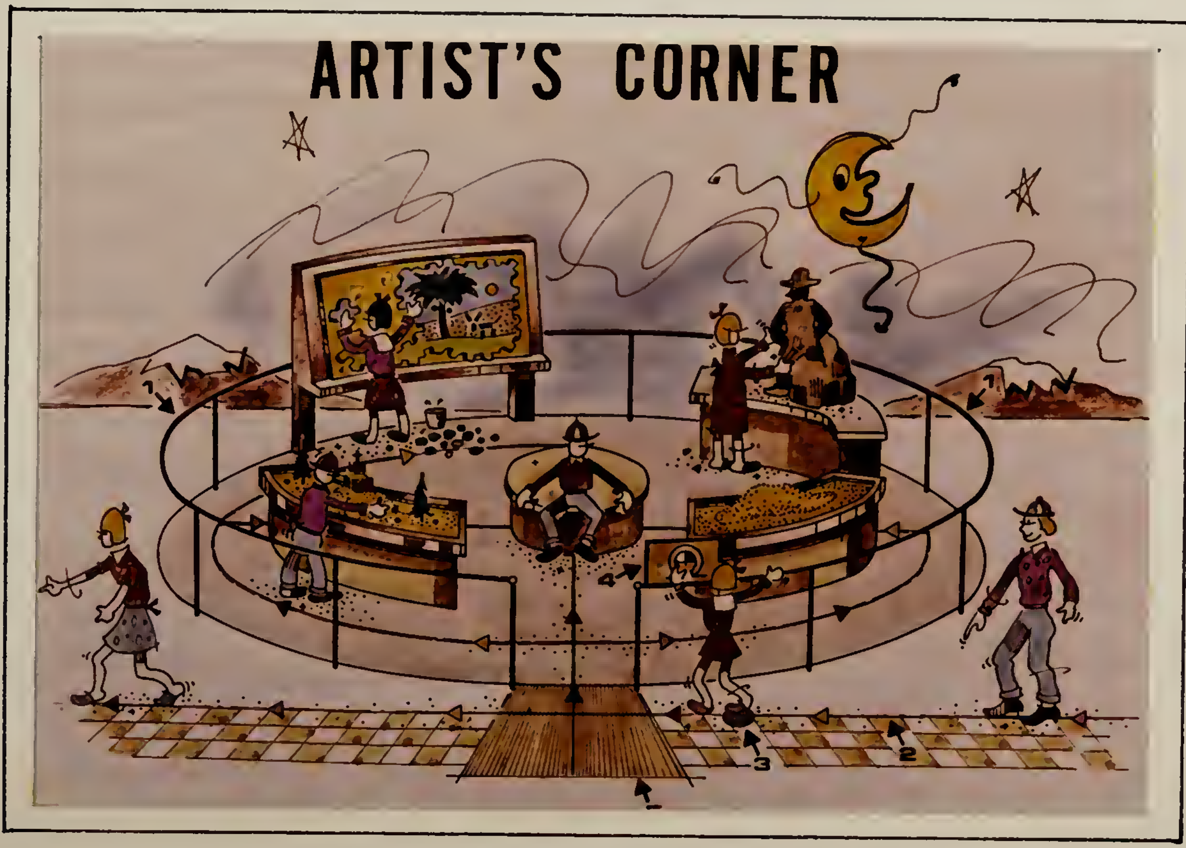
NARRATION

This play court reemphasizes the point made by Spencer, Norris, and others that whereas the sighted child begins to learn almost at birth through the stimulation he receives through his eyes, the blind child can only begin to gain a concrete understanding of the tools, materials, and objects in the world that surrounds him when he actually begins to manipulate them with his own hands. Studies of blind children have shown that those subjects who have been exposed to environments in which they are stimulated and encouraged to use their sense of touch to explore and understand, often produce I.Q.'s that are ten to twenty points higher in comparison with those blind children who have not been so stimulated.

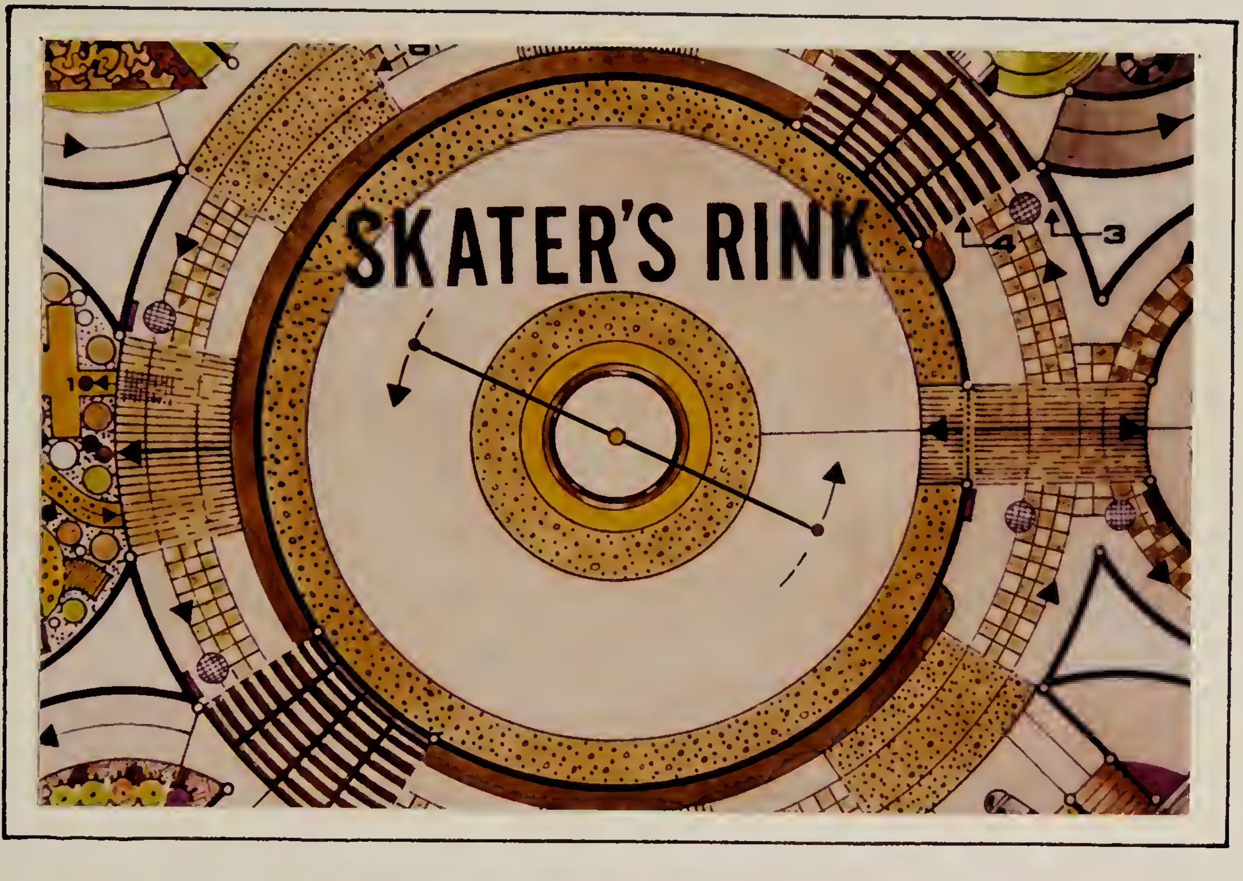
The blind girl in the background on the slide is painting a picture with her fingertips using such objects as pebbles, beads, and bottle-caps that she glues together to form a mosaic wall. The blind girl on the right is carving a statue of a man in wood. Her fingertips guide the chisel to make the proper cuts. Cratty tells us that such modelling of the human form is one of the best possible ways for the young blind child to learn to differentiate right from left on the model itself. The blind boy on the left is using a raised box containing a mixture of wet sand and clay. Here he can model and explore with his fingertips anything from the structure of a hilltop fort to the correct pattern of streets and sidewalks in his own neighborhood.

At this point, please make your next evaluation. In your judgement, how effective do you think this artist's corner will be in helping the blind child to develop in his play a greater degree of orientation skill? Please check one of the four spaces after design element number nine.

Print of Slide (Number 26) Sketch of Artist's Corner Play Court



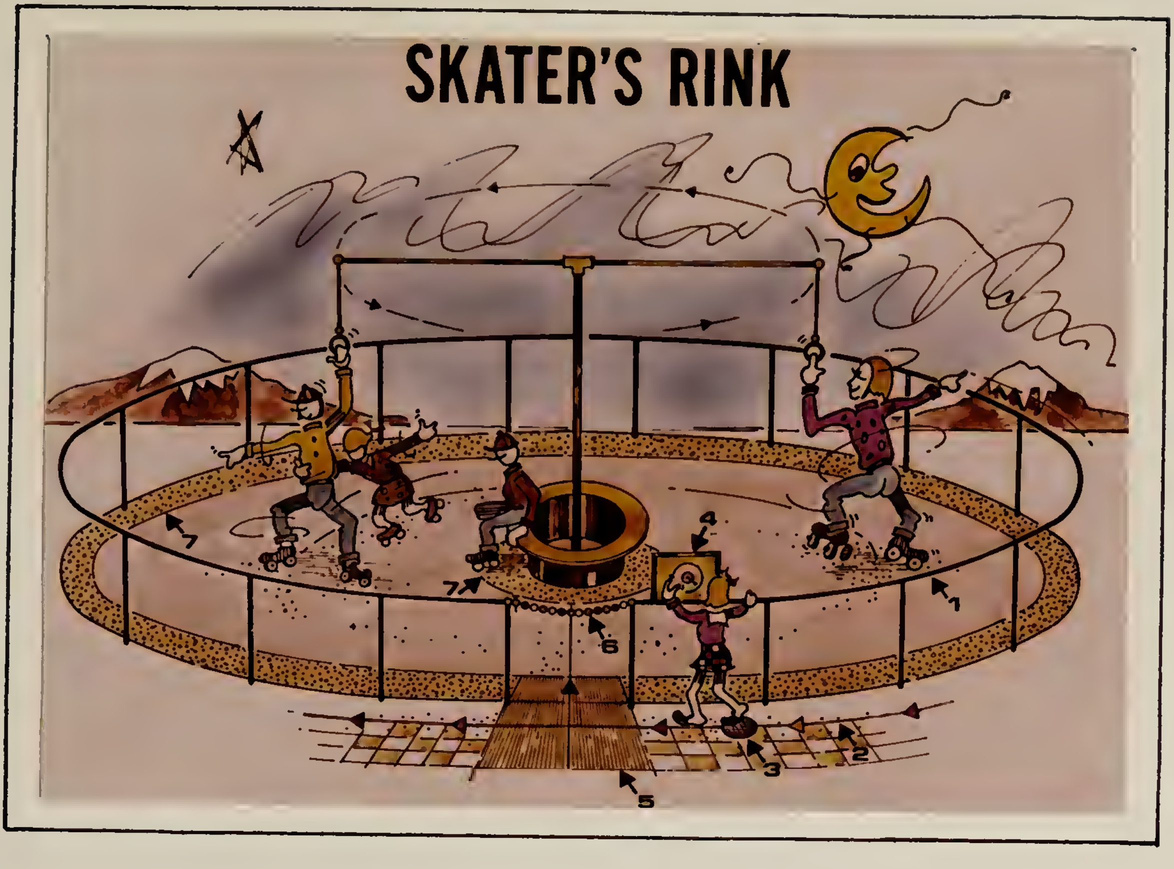
Print of Slide (Number 27) Plan View of Skater's
Rink Play Court



NARRATION

The final design element to be examined in the evaluation of this study is called the skater's rink. This is the larger court located in the center of the play environment.

Print of Slide (Number 28) Sketch of Skater's Rink
Play Court



NARRATION

Experts tell us that all children, including blind children, have a need to participate in hard, vigorous play. Not only does this build strong bodies, but it is also one of the most constructive ways in which a child can work off his frustrations. Of course, the blind child is severely limited in his ability to participate in such vigorous play. He learns from the moment he first begins to move about as a baby that there are many unseen obstacles around him that will hurt him if he strikes them. Thus, he develops the habit of moving slowly and caustiously even in play.

However, here in the skater's rink the blind child can really let himself go perhaps for the first time in his life, and skate just as long and as hard and as fast as he wants to without danger of hurting himself or anyone else. All he needs to do is to keep a firm grasp on the ring attached to the rotating bar.

Arrow Number Six indicates a chain across the entry that the blind child must unlatch and relatch as he enters the court. This is to prevent a disoriented child from unknowingly entering the court and walking into the path of the skaters.

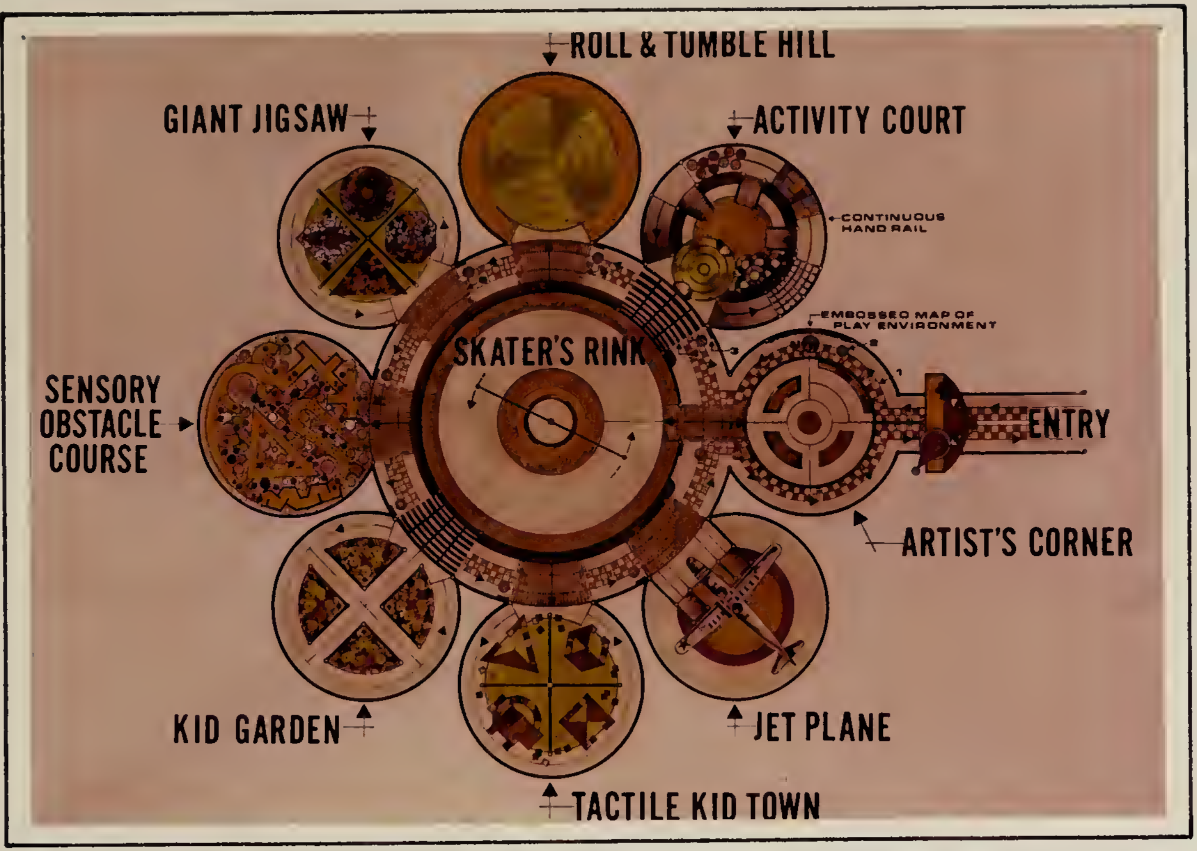
Arrow Number Seven points out a distinct change in texture in the paving of the court surface to warn the blind skater as he moves around the rink that he is getting too close to either the handrail on the outside or the bench in the center.

To use this skater's rink effectively, the blind child must learn to develop abilities that are directly related to improving his mobility and orientation. First, he must develop the self-confidence that will allow him to set aside his fear of moving through unseen

space. Then, he must also develop the skill and body balance required to maneuver effectively on skates.

At this point, please make your next evaluation. In your judgement, how effective do you think this skater's rink will be in helping the blind child to develop in his play a greater degree of mobility and/or orientation skill? Please check one of the four spaces after design element number ten.

Print of Slide (Number 29) Overall Layout of Play Environment



NARRATION

As you have seen, this is a very specialized type of play area specifically designed to encourage the blind child to begin to learn those basic mobility and orientation skills that he must learn if he is to become an independent individual. It is a specialized environment because the mobility and orientation problems of the young blind child are very specialized, and although he does have the same basic human needs that all children have, he will only be able to satisfy those basic needs to the extent that he learns to function independently.

The intent of this play area is definitely not to create a protected little environment away from the real-life world where the blind child can hide from reality. On the contrary, every opportunity to improve his mobility skill, every sensory cue, and every play experience was designed to help the blind child to learn basic skills that he can take with him out into the real-life world and thus improve his chances for more effective integration with his sighted peer.

A recent study by Jones, Lavine, and Shell that investigated the problems of blind children and their integration into sighted peer groups, points out an important conclusion. After all emotionalism is set aside, the stark reality that must be faced by the blind child is that the extent to which he will be accepted by his sighted peers will be in direct relationship to his ability to function independently and to meet them on their own terms.

At this point, please make your last evaluation of this study. Based on your previous evaluations of the effectiveness of the individual design elements that make up this play environment to develop a greater degree of mobility and/or orientation skill, now please make

an evaluation of the effectiveness of the entire play environment as a complete unit in helping the blind child to develop in his play a greater degree of both mobility and orientation skill. Please check one of the four spaces after design element number eleven.

Thank you for participating in this study. If you would like a copy of the final results, please indicate this in the space for additional comments along with any other comments you wish to make. When you have completed your evaluation, please return the questionnaire form to the interviewer.

QUESTIONNAIRE FORM

EVALUATION OF A PLAY ENVIRONMENT FOR BLIND CHILDREN

Interviewee:	Interviewer:
______________________	Robert H. Morris, Investigator
______________________	California State University,
______________________	Sacramento.

Purpose of the Study:

This study will be an evaluation of a play environment for blind children using the judgements of qualified people such as yourself to gather data. These data will be used to test an hypothesis that states that a majority of a sample of people highly qualified in training and educating blind children will agree that the play environment designed for this study will be rated at least effective on the rating scale in helping blind children to develop through their play activity a greater degree of mobility and orientation skill.

Need for the Study:

A survey of the existing literature in this field will show ample evidence of a need for new knowledge and better ways to help blind children to learn in their play activity the basic mobility and orientation skills they will need to learn if they are to function as independent individuals.

Definitions for the purpose of this Study:

Blind Children will be defined as those children of ages from six to twelve years whose visual acuity is not greater than 20/200 even when corrected with glasses. They will further be defined as children who are free of all other disabilities except for their blindness.

Mobility will be defined as the ability to safely and effectively move from one position in the environment to another.

Orientation will be defined as the process of using the remaining senses to effectively relate to significant elements in the surrounding environment. This relationship includes both the ability to locate position and direction, and the ability to utilize available tools and materials.

Instructions for completing the Questionnaire:

You will now be shown a recorded, slide presentation of a play environment for blind children. This play environment has been specifically designed to encourage the blind child to learn to participate independently in play by using his remaining senses. As the various design elements in this play environment are presented to you on the slides, you will be asked in the recorded narration to make an evaluation of the effectiveness of different parts of the design in helping a blind child to develop through that particular play activity a greater degree of mobility and orientation skill. To make these evaluations, please place a check mark in one of the four spaces after each design element as it is considered.

Explanation of the Evaluation Rating Scale:

Your evaluation will be made by selecting one of the following choices.

VERY EFFECTIVE (Meaning the design element being considered is very effective in helping the blind child to develop through that particular play activity a greater degree of mobility and/or orientation skill).

EFFECTIVE (Meaning the design element is effective in accomplishing the above purpose).

NOT EFFECTIVE (Meaning the design element is not effective in accomplishing the above purpose).

VERY INEFFECTIVE (Meaning the design element is very ineffective in accomplishing the above purpose).

If you are undecided about the effectiveness of the design element to accomplish the above purpose, do not check any of the four spaces.

Evaluations:

Please make your evaluation of each design element when you are requested to do so in the recorded narration by checking the appropriate space below.

Play Environment Design Element to be Evaluated	Evaluation in Degree of Effectiveness of Each Design Element			
	Very Effective	Effective	Not Effective	Very Ineffective
1. Embossed Map of Play Environment				
2. Activity Play Court				
3. Roll and Tumble Hill				
4. Giant Jigsaw				
5. Sensory Obstacle Course				
6. Kid Garden				
7. Tactile Kid Town				
8. Jet Plane				
9. Artist's Corner				
10. Skater's Rink				
11. Play Environment as a complete unit				

Thank you for participating in this study. If you would like a copy of the final results please indicate this below.

Please return this questionnaire to the interviewer when you have completed your evaluation.

Additional Comments

ADDITIONAL COMMENTS MADE BY ORIENTATION AND MOBILITY SPECIALISTS FOR THE BLIND

I. The play environment is too protective. Teaching mobility and orientation to a blind child is based on motivating him to take a chance and being willing to make a mistake for the sake of learning.

II. My main objection is the separation factor involved in a special play environment. Why couldn't this be located in a park where it could be used by both blind and sighted children together?

III. I think it is an excellent play area for blind children, but to what extent it teaches mobility and orientation skills is debatable.

IV. (Question) In your experience in working with blind children, do you believe that the blind child can and does learn to use the conventional playground successfully?

(Answer) It depends on the individual blind child. You see, there is a wide range of abilities among blind children. The most competent of them could and do learn to use the conventional playground, but they are a minority. The majority of blind children do not try.

V. (Question) Do you think blind children from six to twelve years could learn to use a play environment like this one without assistance by learning to use the sensory cues provided?

(Answer) Again, it depends on the individual child. I have worked with blind children who could zip through this play environment with ease the first time, but most of them would need

assistance and supervision at least at first.

VI. Your play environment would have a better chance of being built if you expanded the scope to include the larger group of multiple handicapped blind.

VII. (Question) In your experience in working with blind children, have you found that they have a strong preference as to whether they play with sighted children or other blind children?

(Answer) Some prefer to play with sighted children because they learn more this way. However, probably most blind kids are more comfortable playing with other blind children because they have more in common with them.

VIII. (Question) What is your reaction to the point of view that the best design for blind children is no design at all, because it is better for them to learn to participate under the same circumstances as their sighted counterpart just as they must in real life?

(Answer) I think it has some merit, but I also think it represents an extreme view. In my opinion there are many ways in which the designer can help the blind to live a better and more pleasant life.

IX. Your study represents a lot of thought and work. It is good that there are those interested in this type of work and design.

ADDITIONAL COMMENTS MADE BY TEACHERS FOR BLIND CHILDREN AT A SPECIAL RESIDENT SCHOOL

I. (Question) Based on your experience in working with blind children, do you think a play environment like this one could be located in such a manner that would allow it to be used successfully by both blind and sighted children?

(Answer) In my opinion, no. This has been tried in one or two cases and the results indicate that the sighted children tend to take over and the blind children stop coming to it.

II. The obstacle play course would be good for the totally blind child, but it would be too easy for a blind child with some remaining vision.

III. The tactile walkways are a very good idea.

IV. You have included far too many handrails. This will not promote independence in travel. You need to include more opportunities that will allow the child freedom to use his own initiative to explore.

V. You should have included additional play activities like the use of water, the detection of change in wind, and the use of the walking beam.

VI. The design of the activity play court is dangerous. You should add sand and sawdust to the outside edges also.

VII. The play court with the kid garden is unrealistic in comparison to the rest of the play environment. It could only work with adequate supervision.

VIII. In my opinion you have put too much emphasis on the use of the talking book. However, in some cases it should work very well.

IX. Many blind children are very proud of their ability to move about effectively and some would not use your handrails.

X. I think you could have included some safe, moving play items also that would have added greater interest for the blind child.

ADDITIONAL COMMENTS MADE BY TEACHERS FOR HANDICAPPED CHILDREN AT A SPECIAL NONRESIDENT SCHOOL

I. I think you should broaden your age group to include children below six years. Many of your play activities could be used by children down to walking age.

II. Your play environment should emphasize more play and less structured learning experiences.

III. (Question) In your experience in working with handicapped children, is it a good idea to design a special play environment for just their use, or would it be better to always integrate them in play with other nonhandicapped children?

(Answer) We would like to think that it was always best to integrate them, but actual experience has proven to me that integration is not always in the best interests of the handicapped child.

IV. You should try to develop some type of reinforcement for the child for successful participation in the various play activities. This would reward him for successful accomplishments and motivate him to try even harder next time.

V. Your design and study have been very well done.

VI. You should include the multi handicapped blind also. This would give you many more users.

VII. Your play environment suggests separation of the blind child from his sighted friends. Would this be the best thing for him?

VIII. How about supervision? Some play courts would require a lot, others very little.

IX. I think you have worked out the circulation and transition problems very well for use by blind children. The entries and individual play courts are well defined and contained. The use of the continuous handrail for both guidance and enclosure is very well done.

X. I would like to see such a play environment actually built by using blind children to help design the various elements of the individual play courts.

XI. I think your project should definitely be published to make the data available to others in the field and I personally would like to have a copy of the results.

ADDITIONAL COMMENTS MADE BY TEACHERS FOR VISUALLY HANDICAPPED CHILDREN AT PUBLIC SCHOOLS

I. I don't think this is a play environment for just blind children. I think it could be used equally as well by all children.

II. Is this a play environment or is it a teaching environment? There is much more than just a semantic difference involved.

III. Why did you make the play environment and the play courts round? They should be square like things in the outside world.

IV. I don't believe the younger children could use the embossed maps effectively. Perhaps only the ten, eleven, and twelve year old children could use them.

V. Where might such a play environment like this be located? I can think of only four possible locations?

1. At a special resident school for blind children.
2. At a summer camp for blind children.
3. Possibly at a large medical facility like a children's hospital.
4. Perhaps at a large recreation center serving the handicapped child.

VI. I would eliminate the kid garden court and include in its place a tree house for climbing and swinging.

VII. The play environment seems to meet the objectives you have set up very well.

VIII. How much would such a play environment cost to build?

IX. What type of training would the director of such a play environment need to supervise it properly?

X. Because the numbers of users you are designing for are small, the proper location of such a play environment is a critical consideration.

XI. Has a play environment like this one ever been built before and if it has was it a success?

XII. What role would the parents of the blind children play in relation to this type of play environment? Would they be included or excluded?

XIII. I think you should expand the sandy area under the jet plane to allow for more safe falling area.

XIV. I think the play environment is well thought out, but probably the sharp corners at the endings of the handrailing should be rounded off to eliminate a hazard.

MERICAN FOUNDATION FOR THE BLIND, INC.

50 YEARS OF HELPING BLIND PEOPLE BECOME JUST PEOPLE

821 MARKET STREET
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Tel: 415 392-4845

April 25, 1973

Mr. Robert H. Morris
1228 'O' Street
Sacramento, California 95814

Dear Mr. Morris:

I appreciated the opportunity of meeting you yesterday and viewing the taped material you developed on structuring a play area for blind children.

In my opinion your effort is a most worthwhile project based on a comprehensive review of the literature in the field of blindness, and demonstrates intelligent and industrious effort on your part to contribute an innovative program on behalf of blind children.

I wish you success in your undertaking.

Sincerely yours,

Benjamin Wolf

Benjamin Wolf
Regional Consultant
Community Services Division

BW:mb

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EVALUATION OF A PLAY
ENVIRONMENT FOR BLIND
CHILDREN.

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